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PERSPECTIVES

ON LABOUR AND INCOME

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- The dynamics of housing affordability

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Jungwee Park

Work stress is widely recognized as a major challenge to both the
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even after taking into consideration differences in education, ability
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Highlights

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- ▪ Workers with high-strain jobs were almost two times more likely than those with low-strain jobs to report reduced work activities (odds ratio for men, 1.7; for women, 1.6).

- ▪ On a long-term basis, both men and women with physically demanding jobs were about 1.6 times more likely than those in other jobs to reduce their work activities in the following two years.

- ▪ One in five women with high-strain jobs reported at least one disability day in the previous two weeks.

- ▪ Men in physical jobs were 2.2 times more likely to have a work absence than men in non-physical jobs.

- ▪ Workers who perceived their jobs to be less secure were more likely not to be in labour force two years later (odds ratios were 1.5 for men, 1.3 for women).

▪ Returning to the job after childbirth ... p. 20

- ▪ Employment rates of mothers were consistently lower than those of other women, in both the short- and long-term. For example, the 84% short-term employment rate of the 1984 cohort of mothers was 13 percentage points below that of other women.

- ▪ About 8% of mothers who gave birth in the mid- to late-1980s withdrew from the labour market in the first three years after childbirth, but by the late 1990s and early 2000s the figure was less than 6%.

- ▪ During the 1980s, the birth of a child lowered earnings by about 28% in the year of childbirth. This increased to 30% in the 1990s, and to about 33% after 2000.

- ▪ Although earnings drops were greater for the early 2000s cohorts of mothers than for the mid-1980s cohorts, the earnings recovery process was shorter.

▪ Immigrants in the hinterlands ... p. 27

- ▪ The distribution of the immigrant population in the urban and rural areas differs vastly from the rest of the population. While approximately 34% of Canadians 20 years of age or older live in one of the three largest urban centres (Toronto, Montréal and Vancouver), nearly 75% of immigrants live there. On the other hand, while a little more than one in five Canadians lives in a small city or rural area with a population under 15,000, barely one in forty immigrants lives there.

- ▪ For most Canadians, living in a large metropolitan area is usually synonymous with having a higher income. This trend is the opposite for immigrants. Immigrants' incomes are lowest (median of $16,800) in very large urban areas and their incomes are highest ($19,500) in small urban areas, a difference of 16%.

- ▪ Immigrants living in smaller urban centres or rural areas achieve economic integration faster than immigrants living in very large urban areas. The initial income gap between immigrants and the rest of the population is 37% for those living in very large urban areas. This gap decreases gradually and rather slowly. This gap falls under the 10% mark as of the twelfth year. On the other hand, in small urban areas, the initial gap is only 14%, and as of the fourth year, the gap is reversed, with the income of immigrants becoming 2% greater.

The dynamics of housing affordability   ... p. 37

- Around one-fifth of persons in Canada lived in households spending more than the affordability benchmark (30% of before-tax income spent on shelter) for any given year between 2002 and 2004.

- On a longitudinal basis, the percentage of persons in households exceeding the affordability benchmark was less than 9% for those exceeding the benchmark in all of the three years between 2002 and 2004. Another 19% lived in households spending above the benchmark for either one or two years.

- The attributes associated with the highest probabilities of living in a household spending above the affordability benchmark were: living alone, being a female lone parent, renting, being an immigrant, or living in Vancouver or Toronto.

- Persons living in households experiencing a transition between 2002 and 2004 had a higher probability of exceeding the benchmark at least once during this period. Such transitions included changing rent-subsidy status, changing from owner to renter or vice versa, changing family type (for example, marrying or divorcing), and moving between cities. These transitions did not increase the probability of exceeding the benchmark persistently.

RRSP investments   ... p. 49

- In 2005, 6 in 10 families held registered retirement saving plans, with a median value of $25,000. Among younger families, 56% held RRSPs, compared with 68% of families whose major income recipient was between 45 and 54 years of age. Not surprisingly, those with higher incomes were more likely to own RRSPs and have larger amounts saved. Nearly 90% of families with incomes of $85,000 or more owned RRSPs, compared with only 35% of families with incomes under $36,500.

- Unlike most other components of their retirement savings, investors have control over what types of investments are held in RRSPs. The most common holding was mutual funds (38%), while guaranteed investment certificates were second (20%). Older families (55 to 64) were more likely to hold stable and predictable investment types within their RRSPs (26% held guaranteed investment certificates and 6% held Canada Savings Bonds) than younger families whose retirement investment horizon is significantly longer (15% and 3% respectively).

- The majority of families (59%) with RRSPs held their entire portfolios in investments with variable values (mutual funds, income trusts, stocks and bonds), while just one-quarter held only assets with predictable values (GICs, CSBs and treasury bills). Two-thirds of younger families held variable-value investments exclusively, substantially more than older families. Families with lower after-tax incomes were more likely to hold only investments with predictable values (35% for families with lower incomes, compared with 13% for families with after-tax incomes of $85,000 or more).

Earnings in the last decade   ... p. 57

- Between 1997 and 2007, average real earnings in the private sector rose a solid 15% in Alberta, compared with 5% to 6% in Quebec and Ontario and 3% in British Columbia. In Ontario and Quebec, average real earnings in manufacturing did not fall despite sharp employment decreases since 2004.

- Between 1997 and 2007, the percentage of jobs paying less than $10.00 per hour (in 2002 dollars) fell markedly in all provinces except Newfoundland and Labrador, Ontario and British Columbia. In manufacturing, the proportion of low-paying jobs dropped in all regions except Ontario and British Columbia.

- Of all private-sector employees, managers saw the greatest improvement in their pay rates since the late 1990s. Their average earnings grew 20% between 1997/1998 and 2006/2007, four times the rate observed for other private-sector employees. In contrast, blue-collar workers in manufacturing, cleri-

cal employees, and salespersons in retail trade (three groups that, collectively, accounted for 26% of private-sector employment in 2006/2007) saw virtually no wage growth.

■ The sharp growth for managers had a substantial impact on the upper end of the earnings distribution. Between 1997/1998 and 2006/2007, average hourly earnings grew 12% for the top 5% of private-sector employees, compared with 4% for their counterparts in the middle of the distribution. The more rapid increase for managers accounted for at least one-third of this 8 percentage-point difference.

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Work stress and job performance

Jungwee Park

Work stress is defined as the harmful physical and emotional responses that occur when job requirements do not match the worker's capabilities, resources, and needs (National Institute of Occupational Safety and Health 1999). It is recognized world-wide as a major challenge to individual mental and physical health, and organizational health (ILO 1986). Stressed workers are also more likely to be unhealthy, poorly motivated, less productive and less safe at work. And their organizations are less likely to succeed in a competitive market. By some estimates work-related stress costs the national economy a staggering amount in sick pay, lost productivity, health care and litigation costs (Palmer et al. 2004).

Work stress can come from a variety of sources and affect people in different ways. Although the link between psycho-social aspects of the job and the health and well-being of workers has been well documented (Dollard and Metzer 1999), limited work has been done on the effects of distinct stressors on job performance. As well, various protective factors can prevent or reduce the effects of work stress, and little research has been done toward understanding these mitigating individual and organizational factors.

One important source of work stress is job strain. According to the demand/control model (Karasek 1979), job strain is determined by the interactions between psychological demands and decision latitude (see *Work stress*). The first dimension, the psychological demands on the worker, relate to pace and intensity, skills required, and the ability to keep up with colleagues. The second dimension relates to the degree of creativity versus repetition, as well as the extent of freedom and responsibility to decide what

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to do and when to do it (Lindström 2005). Four work environments can then be derived: high-strain jobs, active jobs, low-strain (relaxed) jobs, and passive jobs (see *Psychological demand/decision latitude model*).

Though simple identification of low- and high-strain jobs may be important, the distinction between job control and psychological demands must be retained because each category can have different effects on workers and their organizations. For instance, when job control is high and psychological demands are also high, learning and growth are the predicted behavioural outcomes. Much of the energy aroused by job challenges can be translated into direct action—effective problem solving—with little residual strain. The growth and learning stimuli are conducive to high productivity. On the other hand, low demand and low control lead to a very unmotivating job setting, which results in gradual loss of previously acquired skills (Karasek 1998).

Psychological demand/decision latitude model
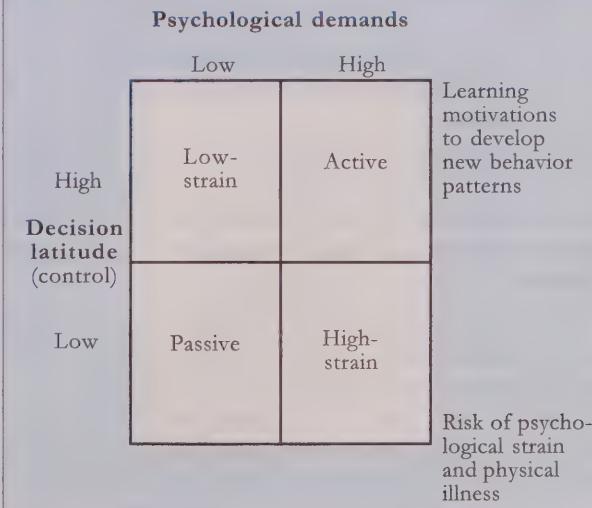
Work stress

To measure work stress, the CCHS and NPHS used an abbreviated version of Karasek's Job Content Questionnaire (JCQ) (Karasek 1985). The CCHS measured work stress of respondents working at jobs or businesses in the past 12 months, while the NPHS measured work stress of those employed at the time of the survey. Twelve items in the JCQ are used to measure job control, psychological demands, job insecurity, physical exertion and workplace social support. Each item is scored using a five-point Likert scale from strongly agree to strongly disagree (items 4 and 7 are reverse scored):

Item	Subscale
1. Your job requires that you learn new things.	control
2. Your job requires a high level of skill.	control
3. Your job allows you freedom to decide how you do your job.	control
4. Your job requires that you do things over and over.	control
5. You have a lot to say about what happens in your job.	control
6. Your job is very hectic.	demands
7. You are free from conflicting demands that others make.	demands
8. Your job security is good.	job insecurity
9. Your job requires a lot of physical effort.	physical exertion
10. You are exposed to hostility or conflict from the people you work with.	social support
11. Your supervisor is helpful in getting the job done.	social support
12. The people you work with are helpful in getting the job done.	social support

Based on scores from the psychological demands and job control items, four psycho-social work conditions are identified: active (above median on both demands and control), high job strain (above median on demands, below median on control), low job strain (below median on demands, above median on control) and passive (below median on both demands and control). Respondents who disagreed or strongly disagreed with the security statement were classified as having job insecurity. Respondents who agreed or strongly agreed with the physical exertion statement were classified as having physically demanding jobs. Respondents were classified as having low workplace social support if they either agreed or strongly agreed with the first social support statement, disagreed or strongly disagreed with the second, or disagreed or strongly disagreed with the third.

Additionally, respondents were asked if they were very, somewhat, not too or not at all satisfied with their jobs. Those not too satisfied or not at all satisfied were classified as having job dissatisfaction. Self-perceived work stress at the main job or business in the past 12 months was measured by asking: "Would you say that most days at work were: not at all stressful? not very stressful? a bit stressful? quite a bit stressful? extremely stressful?" Respondents answering quite a bit or extremely were classified as having high self-perceived work stress.

Job strain is only one stressor workers may face at the workplace. Physical exertion and job insecurity can also cause stress. Even in an era of increasing high-tech information industries, the physical demands of work are still relevant and important to many. Being seriously concerned about physical exertion of work can become a stressor. This is related to concerns about physical hazards and work injuries. Undoubtedly, uncertain job security and the fear of layoff is also an important source of psychological stress for some, especially during times of economic contraction (Williams 2003).

In addition, job satisfaction and self-perceived work stress can show different, yet important, aspects of job stress. Although these two may not identify specific sources of work stress, they show to what extent workers are dissatisfied with their jobs and perceive their daily work as stressful. Thus, many distinct sources and dimensions of work stress that could negatively affect some people can be identified. This article investigates levels, sources and effects of work stress for different socio-demographic and occupational groups.

The 2002 Canadian Community Health Survey (CCHS) and various cycles of the National Population Health Survey (NPHS) are used to examine work stress and its effect on Canadian workers (see *Data sources*). First, the article describes work stress levels of employed persons aged 15 to 75 by selected characteristics. Second, cross-sectional and longitudinal analyses examine how work stress factors are associated with current and long-term productivity in terms of reduced work activities, disability days, and absence or separation from work. Multivariate techniques are used to control for employment characteristics and protective factors such as social support and individual coping behaviours (see *Job-related variables* and *Social support and coping behaviours*). Social support buffering

Data sources

The cross-sectional analysis on work stress is based on the Canadian Community Health Survey (CCHS): Mental Health and Well-being, which was introduced in May 2002 and conducted over eight months. The survey covered almost 37,000 people aged 15 or older living in private dwellings in the 10 provinces. Most interviews (86%) were conducted in person; the remainder, by telephone. Respondents were required to provide their own information—proxy responses were not accepted. The survey response rate was 77%.

The longitudinal analysis is based on the National Population Health Survey (NPHS). The NPHS, which began in 1994/95, collects information about the health of Canadians every two years. It covers household and institutional residents in all provinces and territories. In 1994/95, about 20,000 respondents were selected for the longitudinal panel. The response rate for this panel in 1994/95 was 86.0%. Attempts were made to re-interview these respondents every two years. The response rates for subsequent cycles, based on the original respondents, were 92.8% for cycle 2 (1996/97), 88.3% for cycle 3 (1998/99), 84.8% for cycle 4 (2000/01), 80.5% for cycle 5 (2002/03), and 77.4% for cycle 6 (2004/05). This analysis uses the cycle 6 longitudinal square file, which contains all responding members of the original panel regardless of whether information was obtained in all subsequent cycles.

Chart A   More employed women reported high job strain than men
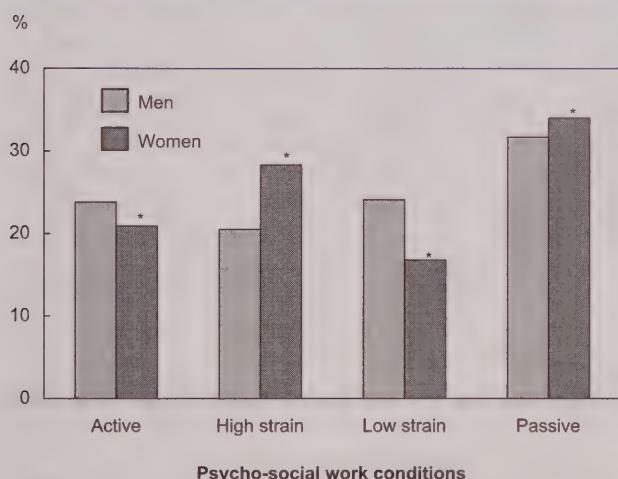
* significantly different from men
Note: Employed population 15 to 75, Canada excluding Territories.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2, 2002.

Chart B   Employed women were more likely to report high work stress

* significantly different from men
Note: Employed population 15 to 75, Canada excluding Territories.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2, 2002.

may depend on support from co-workers and supervisors as well as personal sources. Personal coping mechanisms may play an important role in controlling effects of work stress.

To account for survey design effects, the bootstrap technique was used to estimate coefficients of variation and p-values and to perform significance tests. The significance level was set at 0.05.

More work stress among women

Proportionately more employed women reported greater work stress than men—28% had high-strain and 17% had low-strain jobs, compared with 20% and 24%, respectively, for men (Chart A). Men were more likely to have active jobs than women. Small, but significant, differences were also found for self-perceived work stress (Chart B). One-third of women felt quite a bit or extremely stressed most days at work, compared with 29% of men. According to a multivariate analysis, employed women were 1.2 times more likely to report high self-perceived work stress, even after controlling for other socio-demographic and employment-related factors (data not shown).

Table 1 Work stress indicators

	Psycho-social work conditions				Physical exertion	Job inse-curity	Job dissatis-faction	High self-perceived work stress
	Active	High strain	Low strain	Passive				
					%			
Age								
15 to 24	8.1*	28.0(*)	14.2(*)	49.7*	52.8*	13.4	14.4(*)	21.1*
25 to 39	26.1	24.6	21.4	28.0	44.2	15.6	10.4*	32.0*
40 to 54 (ref)	27.5	23.7	21.3	27.4	42.1	15.2	7.8	35.8
55 to 64	21.1*	19.5(*)	26.1*	33.3*	38.5(*)	13.2	5.6(*)	29.2*
65 and over	13.6*	10.2*E	32.5*	43.8*	31.0*	11.2E	3.9(*)	14.7*
Personal income								
Less than $20,000	9.4*	27.6*	13.6*	49.4*	51.9*	19.4*	13.3*	22.2*
$20,000 to $59,999	22.9*	25.5*	22.3(*)	29.4*	44.3*	13.7*	9.0*	32.3*
$60,000 or more (ref)	34.8	18.0	24.9	22.3	36.4	11.8	5.0	36.0
Education[1]								
Less than high school graduation	12.1*	24.4(*)	16.7*	46.8*	63.0*	13.9	8.8	26.0*
High school diploma	19.0*	27.8*	17.0*	36.2*	49.3*	13.2*	8.3	29.7*
Some college/university	20.1*	25.5(*)	21.5*	33.0*	41.1*	17.3	8.8	29.6(*)
Bachelor's or higher (ref)	31.9	21.2	25.4	21.5	35.1	15.6	8.4	36.0
Marital status[1]								
Married (ref)	26.4	22.3	23.2	28.2	42.0	13.9	7.6	33.0
Never married	23.7*	26.0(*)	20.3*	30.0	43.4	18.7*	12.5*	30.1*
Divorced, separated, widowed	24.7	26.8(*)	17.8*	30.8	42.6	18.9*	9.7*	37.0(*)
Student status								
Yes	11.8(*)	26.2(*)	15.3(*)	46.6(*)	45.4	14.3	14.1(*)	23.4(*)
No (ref)	24.3	23.7	21.7	30.3	44.0	14.8	8.8	32.0
Shift work								
Yes	16.2*	29.4*	16.4*	38.1(*)	54.4*	15.3	11.5*	28.7(*)
No (ref)	25.3	21.7	22.7	30.3	39.5	14.4	8.7	31.5
Self-employment								
Yes	28.1*	13.7*	34.1*	24.2*	46.0	17.8*	4.8*	29.5
No (ref)	21.3	26.2	18.1	34.4	43.9	14.1	10.5	30.9
Full-time work								
Yes	25.5*	23.8	21.7(*)	29.0*	44.3*	14.2(*)	9.4	33.0*
No (ref)	8.4	25.2	15.9	50.5	43.5	16.6	10.8	19.4
Occupation								
White-collar (ref)	34.6	20.0	25.2	20.2	24.9	13.4	7.7	38.1
Sales and service	10.9*	31.1*	13.8*	44.3*	50.0*	15.4(*)	13.0*	25.9*
Blue-collar	12.3*	24.5*	19.5*	43.7*	72.8*	15.0	10.7*	23.3*

* significantly different from reference group (ref) (p<0.05); (*) no longer significant after controlling for sociodemographic and employment factors
1. Excludes those aged 15 to 24.
Note: Employed population 15 to 75, Canada excluding Territories.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2, 2002.

A higher proportion of men reported that their jobs required a lot of physical effort—48% versus 40%. However, the significance of these findings disappeared after controlling for other socio-economic and employment variables. This may be associated with men's employment in blue-collar jobs. Job insecurity was the same for both men and women: about 15% reported a high amount. Similarly, the level of job dissatisfaction was equal (about 1 in 10).

Age differences

Compared with other age groups, core-age workers (aged 25 to 54), most likely at the peak of their careers, were more likely to be in active jobs and less likely to be in passive jobs (Table 1). Those aged 40 to 54 were most likely to perceive their work as stressful.

Almost half of young workers (aged 15 to 24) were in passive jobs, a significantly higher rate than their core-aged counterparts, even after controlling for other factors, including student status. More than half of young workers also reported physical exertion in their jobs. Interestingly, however, these younger workers were less likely to perceive their work days as stressful. This may be because they realize that their current jobs are not their long-term careers.

About a third of older workers (aged 65 or older) tended to have relaxed (low-strain) jobs. Also, less than 4% expressed dissatisfaction with their jobs. Many may be semi-retired or part-time workers returning to work after retirement.

Even after controlling for related factors such as work hours, student status or shift work, most of these age differences remained significant.

Socio-economic status matters

Individuals with low personal incomes were more likely to have high-strain or passive jobs than individuals with high incomes. Almost half of workers with incomes of less than $20,000 had passive jobs compared with only about one in five workers with $60,000 or more. A larger proportion of individuals with low incomes reported higher job insecurity and job dissatisfaction. This may be partly because they were less likely to have permanent or unionized jobs.[1] Also, they tended to have more physically demanding jobs than people with higher incomes. Individuals in the highest income group were more likely to have active and low-strain jobs due to greater job control—however, they tended to perceive their work as more stressful. Not surprisingly, psychological demands from work were highly correlated with self-perceived work stress ($r = 0.35$). However, job control and self-perceived work stress were positively associated as well—almost half of workers with active jobs expressed high self-perceived work stress, a higher rate than workers with high-strain jobs (41%) (data not shown).

Similar patterns were found for education levels. Individuals with more education were more likely to have low-strain, active, and less physically demanding jobs than workers with less education. For example, one in four workers with a university degree had a low-strain job compared with only one in six workers with less than high school graduation. Finally, as with income, workers with the most education were more likely to perceive their work as more stressful than workers with less education.

Married workers were more likely to have active and lower-strain jobs than never-married workers. They also had significantly lower rates of job insecurity and job dissatisfaction than those never or previously married. For some aspects of work stress, however, other factors appeared more important than marriage. For instance, although a much higher proportion of divorced, separated or widowed women reported high self-perceived work stress than married women, the difference was not statistically significant when other factors were controlled for.

Work stress and job-related variables

Shift workers were more likely to have high-strain jobs than other workers (29% vs. 22%). They had higher levels of psychological demands and lower levels of job control. Furthermore, compared with regular-schedule workers, shift workers were more likely to perceive their jobs as physically demanding (54% vs. 40%) and less satisfying (12% vs. 9%). These findings are consistent with previous research indicating poorer general health and higher levels of work stress among shift workers (Harrington 2001; Shields 2006). Shift workers' stress may result from lack of socializing with

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Job-related variables

Occupation was collapsed into three groups: white-collar (management; professional; technologist, technician or technical occupation; and administrative, financial or clerical), sales or service, and blue-collar (trades, transport or equipment operator; farming, forestry, fishing or mining; and processing, manufacturing or utilities).

Shift work refers to anything other than a regular daytime schedule (evening, night, rotating or split shifts).

The self-employed are those who worked mainly in their own businesses or professional practices, or on their own farms.

Those working 30 or more hours a week at their main jobs were considered full-time.

For respondents with more than one job, classifications were based on the one with the most weekly hours (main job).

Social support and coping behaviours

The emotional and informational support variable in the 2002 CCHS used an abridged version of measures in the Medical Outcomes Study (MOS). Respondents were asked: "How often is each of the following kinds of support available to you if you need it? Someone:

- you can count on to listen when you need to talk?"

- to give you advice about a crisis?"

- to give you information in order to help you understand a situation?"

- to confide in or talk to about yourself or your problems?"

- whose advice you really want?"

- to share your most private worries and fears with?"

- to turn to for suggestions about how to deal with a personal problem?"

- who understands your problems?"

Each item was scored from 0 (none of the time) to 4 (all of the time). Social support was considered a continuous variable, with a score ranging from 0 to 32.

In the NPHS, perceived emotional social support was measured by four yes or no questions in cycles 1 and 2, and by the above questions in cycles 3 to 5. The cycle 1 and 2 questions were:

- "Do you have someone you can talk to about your private feelings or concerns?"

- "Do you have someone you can really count on in a crisis situation?"

- "Do you have someone you can really count on to give you advice when you are making important personal decisions?"

- "Do you have someone who makes you feel loved and cared for?"

Respondents had low emotional social support if they answered no to at least one question. In cycles 3 to 5, respondents answering none of the time or a little of the time to any of the eight questions were considered to have low emotional/social support.

The CCHS asked all respondents how they coped with stress. It also asked how often (often, sometimes, rarely or never) they used each of 14 methods:

1.   try to solve the problem

2.   talk to others

3.   avoid being with people

4.   drink alcohol more than usual

5.   smoke more cigarettes than usual

6.   use drugs or medication

7.   eat more or less than usual

8.   sleep more than usual

9.   pray or seek spiritual help

10. jog or other exercise

11. relax by doing something enjoyable

12. blame yourself

13. wish the situation would go away or somehow be finished

14. try to look on the bright side of things

The negative coping behaviours (3 to 8, 12, 13) and positive behaviours (1, 2, 9 to 11, 14) were identified by exploratory factor analysis. Chronbach's alpha of negative coping was 0.60 and that of positive coping 0.51. A response of often or sometimes was considered as use of a coping behaviour.

The NPHS measured heavy drinking by asking respondents how often they had had 5 or more alcoholic drinks on one occasion in the past year; having done so at least once a month (or 12 or more times in the past year for cycle 1) was classified as heavy monthly drinking.

Daily smokers were those who smoked cigarettes every day.

Obesity was based on a body mass index (BMI) of 30 or more for people aged 18 or older. Age/sex specific cutoffs were used to classify the BMIs of people under age 18 (Cole et al. 2000).

Physical activity was based on total accumulated energy expenditure (EE) during leisure time, calculated from the reported frequency and duration of all leisure-time physical activities in the three months before the interview and the metabolic energy demand (MET) of each activity, which was independently established (Statistics Canada 1995; Stephens et al. 1986).

$EE = S(N_i{}^*D_i{}^*MET_i/365 \text{ days})$, where

N_i = number of occasions of activity i in a year,

D_i = average duration in hours of activity i, and

MET_i = a constant value for metabolic energy cost of activity i.

For each respondent, daily EE was the sum of energy expenditures of all leisure-time activities, expressed as total kilocalories expended per kilogram of body weight per day (K/K/D). An EE of 3 or more K/K/D was defined as high; 1.5 to 2.9, moderate; and less than 1.5, low (Statistics Canada 1995). Respondents with high or moderate EE were considered physically active; those with low EE, inactive.

family and friends, difficulty planning for family responsibilities, taking part in regular job activities or forming routines (Occupational Health Clinics for Ontario Workers 2005). It may also be related to the health effects shift work causes, such as disruption of circadian rhythm, reduction in quality and quantity of sleep, fatigue, anxiety, depression and increased neuroticism (Harrington 2001).

Being one's own boss should bring the ultimate control over work. In fact, job strain was significantly less prevalent among the self-employed: 14% had high-strain jobs compared with 26% of other workers. Almost 30% had active jobs. More than one in three self-employed workers had low-strain jobs. They also tended to be satisfied with their work—only 5% reported job dissatisfaction, significantly less than employees (11%). However, almost one in five self-employed workers felt their jobs were not secure. Unlike employees, who are paid even when business is slow, self-employed workers must market and promote their businesses in order to generate earnings. They are especially concerned about job security since they do not qualify for benefits or overtime, vacation or severance pay.

Since part-time employment often includes temporary, casual and term arrangements, it is not too surprising to find that full-time workers were much more likely to have active jobs than part-time workers (26% vs. 8%). That is, full-timers had greater psychological demands and more job control at the workplace. More than half of part-time workers were low in both job control and psychological demands (passive jobs). In contrast, full-time workers were more likely to perceive their work days as stressful. Overall, full-time workers were slightly more likely to perceive their jobs as requiring a lot of physical effort.[2]

A more in-depth analysis of work hours found that those working more than 40 hours a week were less likely than regular or part-time workers to have high-strain jobs and most likely to have active jobs.[3]

In general, white-collar workers had significantly higher levels of decision latitude than the other occupational groups (blue-collar, and sales and service). More than a quarter had low-strain jobs. And, white-collar workers were more likely to have active jobs—more than a third compared with about one-tenth of other workers. Since many blue-collar jobs involve manual labour, it is not surprising that a high proportion of blue-collar workers (73%) perceived their work as

physically demanding. Finally, a higher proportion of white-collar workers reported a high level of job satisfaction compared with other workers, but they were also more likely to perceive their work as stressful.

Multivariate analysis

To examine how work stress factors are associated with productivity, multivariate logistic regression models were developed. Models were first run for each of the four work-stress conditions[4] to test for associations with selected job performance outcomes—reduced activities at work, at least one disability day in the past two weeks, and being absent in the past week. These models controlled for possible confounders: occupation, hours, shift work, self-employment, age, marital status, education and income. In the second step, the models were re-run to include a set of mitigating factors that could potentially protect against outcomes associated with work stress. These factors included co-worker support, emotional support, and positive and negative coping behaviours. To control for likely correlations and interactions, separate regression analyses for each source of work stress were run for the first two sets of models. Finally, in the third model, all work stress-related factors were controlled for simultaneously, in addition to all other confounding and protective variables. Since these multivariate analyses were based on cross-sectional data, neither causality nor temporal ordering can be inferred.

Reduced work activities due to long-term health issues

Workers with high-strain jobs were more likely than those with low-strain jobs to report reduced work activities due to a long-term health problem.[5] The odds ratio for men was 1.7; for women, 1.6 (Table 2). For men, an active job was also associated with reduced work activities, while highly physical jobs and job insecurity were for both sexes. When social support and coping factors were accounted for, however, most associations with reduced work activities were no longer significant, with the exception of physical exertion among women and self-perceived work stress for both sexes. In other words, a supportive environment both at and away from work may help prevent reduced work activities by mitigating the effects of work-related stress. But, those relying on negative coping mechanisms are at risk of reduced activities. Detailed findings show that, for men, high workplace social co-worker support was associated

Table 2 Reduced activity at work due to a long-term health problem

	Men, controlling for				Women, controlling for			
		Employment and personal factors[1]	Employment, and personal[1] and protective factors[2]			Employment and personal factors[1]	Employment, and personal[1] and protective factors[2]	
	Preva-lence	Sepa-rately	Sepa-rately	Com-bined	Preva-lence	Sepa-rately	Sepa-rately	Com-bined
	%	Odds ratio			%	Odds ratio		
Psycho-social work conditions								
Active	10.0	1.37*	1.22	1.14	10.1	1.08	0.99	0.91
High strain	13.2*	1.69*	1.29	1.21	14.9*	1.60*	1.35	1.25
Low strain (ref)	8.2	1.00	1.00	1.00	9.9	1.00	1.00	1.00
Passive	10.5	1.26	1.16	1.16	9.6	0.93	0.86	0.87
Physical exertion								
Yes	12.0*	1.24*	1.16	1.16	13.5*	1.34*	1.35*	1.29*
No (ref)	8.9	1.00	1.00	1.00	9.8	1.00	1.00	1.00
Job insecurity								
Yes	13.1*	1.29*	1.05	1.00	13.4*	1.24*	0.98	0.94
No (ref)	9.9	1.00	1.00	1.00	10.9	1.00	1.00	1.00
High self-perceived work stress								
Yes	13.6*	1.73*	1.45*	1.42*	14.3*	1.64*	1.42*	1.35*
No (ref)	9.0	1.00	1.00	1.00	9.7	1.00	1.00	1.00

* significantly different from reference group (ref) (p<0.05)
1. Age, personal income, education level, marital status, student status, shift work, self-employment, full-time work and occupation.
2. Co-worker or emotional support and positive or negative coping behaviours.
Note: Employed population 15 to 75, Canada excluding Territories.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2, 2002.

with a lower likelihood of reduced work activities, for women, it was high emotional and informational support. For both sexes, negative coping behaviours (for example, drinking alcohol, smoking or drug use) were associated with reduced activities at work (see *Social support and coping behaviours*).

Disability days in the last two weeks
In the CCHS, currently employed respondents had a disability day in the past two weeks if they stayed in bed all or most of the day (including nights in hospital), cut down on normal activities, or required extra effort in their daily activities because of illness or injury.

Men with active or high-strain jobs were 1.5 times more likely than those with low-strain jobs to report at least one disability day during the last two weeks (Table 3). This difference may not represent merely different levels of psychological demands. In a more in-depth analysis with active job as the reference group, the likelihood of men taking disability days in active

jobs was higher than for passive workers (data not shown). Being an active worker with high job control along with high psychological demands is associated with short-term work interruptions like disability days. With protective factors accounted for, however, the statistically significant associations of some work stress sources (physical exertion for men and high-strain jobs for women) to disability days disappeared. As with reduced work activities, detailed findings revealed that negative coping behaviours tended to increase the likelihood of disability days for both sexes.

High self-perceived work stress was strongly related to taking disability days. Almost one in five men and women who perceived their regular work days to be stressful took at least one disability day in the last two weeks. The association was significant in all models but one. When all work stress indicators were included, the association was no longer significant for women. This suggests that different sources of work stress do not occur in isolation but indeed interact with one another (Shields 2006).

Table 3 Disability day in the last two weeks

| | Men, controlling for | | | | Women, controlling for | | | |
| | | Employment and personal factors[1] | Employment, and personal[1] and protective factors[2] | | | Employment and personal factors[1] | Employment, and personal[1] and protective factors[2] | |
	Preva-lence	Sepa-rately	Sepa-rately	Com-bined	Preva-lence	Sepa-rately	Sepa-rately	Com-bined
	%		Odds ratio		%		Odds ratio	
Psycho-social work conditions								
Active	16.2*	1.53*	1.47*	1.39*	17.7	1.07	1.00	0.98
High strain	17.2*	1.54*	1.38*	1.33*	20.9*	1.30*	1.10	1.07
Low strain (ref)	11.3	1.00	1.00	1.00	15.9	1.00	1.00	1.00
Passive	11.7	1.01	0.98	0.98	16.7	0.98	0.91	0.93
Physical exertion								
Yes	15.0*	1.15	1.13	1.10	19.3	1.16	1.14	1.13
No (ref)	12.7	1.00	1.00	1.00	17.1	1.00	1.00	1.00
Job insecurity								
Yes	14.0	0.96	0.86	0.82	19.3	1.12	0.99	0.96
No (ref)	13.8	1.00	1.00	1.00	17.8	1.00	1.00	1.00
High self-perceived work stress								
Yes	17.2*	1.52*	1.39*	1.31*	20.0*	1.33*	1.16*	1.14
No (ref)	12.4	1.00	1.00	1.00	17.0	1.00	1.00	1.00

* significantly different from reference group (ref) (p<0.05)
1. Age, personal income, education level, marital status, student status, shift work, self-employment, full-time work and occupation.
2. Co-worker or emotional support and positive or negative coping behaviours.
Note: Employed population 15 to 75, Canada excluding Territories.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2, 2002.

Absence from work

The CCHS asked: "Last week, did you have a job or business from which you were absent?" For this study, those who reported an absence from work and indicated own illness or injury as the primary reason were considered to be absent from work due to a health problem.[6]

A physically demanding job turned out to be an important factor for work absence for both men and women. Those who reported a lot of physical effort were about twice as likely to be absent from work. For example, men in physical jobs were 2.2 times more likely to have a work absence than those in non-physical jobs; for women, the odds ratio was 1.9 (Table 4). This result is consistent with previous research suggesting significant associations between sickness absence and physical load, and risk factors in the work environment (Lund et al. 2006; von Thiele et al. 2006).

Women with high self-perceived work stress were more likely than those without such stress to be absent from work. For men, however, self-perceived work stress and work absence were not significantly associated. Detailed analyses showed social support and positive coping behaviours (problem solving, physical exercise, being positive, etc.) did help to reduce the likelihood of work absence for women, whereas negative coping (drinking, smoking, drug use, etc.) increased the likelihood of women being absent from work.

Longitudinal effects of work stress

Longitudinal analysis is especially useful for work stress since it could reveal long-term cumulative effects of stress and clearer causal relationships between stress and job performance. Because some variables were not available, or were measured differently in the

Table 4 Work absence due to a health problem

	Men, controlling for				Women, controlling for			
		Employment and personal factors[1]	Employment, and personal[1] and protective factors[2]			Employment and personal factors[1]	Employment, and personal[1] and protective factors[2]	
	Preva-lence	Sepa-rately	Sepa-rately	Com-bined	Preva-lence	Sepa-rately	Sepa-rately	Com-bined
	%	Odds ratio			%	Odds ratio		
Psycho-social work conditions								
Active	0.8[E]	0.51	0.45	0.43	1.6[E]	1.10	0.93	0.73
High strain	1.4[E]	0.64	0.56	0.54	2.7*	1.54	1.24	1.02
Low strain (ref)	F	1.00	1.00	1.00	1.3[E]	1.00	1.00	1.00
Passive	0.9[E]	0.40	0.39	0.41	1.7[E]	0.92	0.83	0.83
Physical exertion								
Yes	1.7[E]*	2.20*	2.03*	2.00*	2.8*	1.93*	1.86*	1.71*
No (ref)	0.6[E]	1.00	1.00	1.00	1.2	1.00	1.00	1.00
Job insecurity								
Yes	0.7[E]	0.68	0.63	0.60	1.9[E]	1.03	0.87	0.80
No (ref)	1.2[E]	1.00	1.00	1.00	1.9	1.00	1.00	1.00
High self-perceived work stress								
Yes	1.3[E]	1.49	1.25	1.41	3.0*	2.39*	2.11*	2.05*
No (ref)	1.0[E]	1.00	1.00	1.00	1.3	1.00	1.00	1.00

* significantly different from reference group (ref) (p<0.05)
1. Age, personal income, education level, marital status, student status, shift work, self-employment, full-time work and occupation.
2. Co-worker or emotional support and positive or negative coping behaviours.
Note: Employed population 15 to 75, Canada excluding Territories.
Source: Statistics Canada, Canadian Community Health Survey, cycle 1.2, 2002.

NPHS, the longitudinal models differ slightly from the corresponding CCHS-based cross-sectional models. For example, smoking, drinking alcohol, physical activity and BMI variables were used in the longitudinal models as rough proxies of the coping behaviour available from the CCHS.

The long-term effects of work stress on job performance were examined by using repeated observations over two-year periods. Pooling of repeated observations was combined with logistic regression analysis. Three cohorts of pooled observations were used, with baseline years of 1994/95 (cycle 1), 2000/01 (cycle 4) and 2002/03 (cycle 5). Each cycle had questions on work stress. For each baseline year, employed persons aged 15 to 75 (15 to 54 for the model for being out of labour force) were selected for analysis.

Reduced activities at work two years later
Only workers reporting no reduced work activities in the baseline were included for analysis. The NPHS asked current workers: "Because of a long-term physi-

cal or mental condition or a health problem, are you limited in the kind or amount of activity you can do at work?" Those answering yes in the follow-up survey two years later were considered to have reduced activities at work.[7]

Workers with active jobs were twice as likely as those with low-strain jobs to have reduced work activities two years later, even after controlling for various confounding factors, including social support and coping behaviours (Table 5). This is not consistent with the assumption that active jobs create the context of growth and learning conducive to high productivity (Karasek 1998). Being in active jobs may raise current productivity, but working under high demands and high responsibility (control) may cost workers health and productivity later.

As well, physical exertion appeared to increase the long-term likelihood of reducing work activities. Both men and women who worked in physically demanding jobs were around 1.6 times more likely

Table 5 Longitudinal labour force outcomes, over a two-year period

	Men			Women		
	Reduced activity at work	Disability day	Out of labour force	Reduced activity at work	Disability day	Out of labour force
			Odds ratio			
Psycho-social work conditions						
Active	2.01*	1.39	0.66*	2.08*	1.36	0.87
High strain	2.29*	2.02*	0.87	1.72	1.06	0.80
Low strain (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Passive	1.53*	1.39	0.94	1.37	1.20	1.04
Physical exertion						
Yes	1.60*	1.05	0.93	1.67*	0.90	1.02
No (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Job insecurity						
Yes	1.10	0.85	1.45*	1.12	1.03	1.33*
No (ref)	1.00	1.00	1.00	1.00	1.00	1.00

* significantly different from reference group (ref) (p<0.05)
Note: Employed population 15 to 75, Canada excluding Territories.
Source: Statistics Canada, National Population Health Survey, 1994/1995, 2004/2005.

than those in other jobs to reduce their work activities two years later. Men with passive or high-strain jobs were more likely than workers with low-strain jobs to reduce work activities two years later, suggesting that these types of work stress may have contributed to long-term health problems that eventually affect productivity.

Disability days two years later
Men with high-strain jobs in the baseline year were more likely to take disability days two years later.[8] They were twice as likely as men with low-strain jobs to have disability days even after controlling for socio-demographic, employment and social support factors (Table 5).

As with reduced work activities, workers hit hardest by work stress may already have left the labour force and so were not included for analysis. Disability days may be affected more by concurrent conditions than longitudinal ones, as the concept focused on short-term effects such as staying in bed, cutting down on normal activities, or requiring extra effort for daily activities, whereas reduced work activities measured results from long-term health conditions.[9]

Being out of labour force two years later
Those working in the baseline survey but not two years later were considered as being out of labour force. To minimize the potential effect of retirement,

the analysis of out of the labour force was limited to workers aged 15 to 54.

Not surprisingly, workers who perceived their jobs to be less secure were more likely not to be in labour force two years later. The odds ratios were 1.5 for men with job insecurity and 1.3 for women, after controlling for various confounding factors (Table 5). Men with active jobs were more likely to remain in the labour market than men with low-strain jobs. While these findings are generally consistent with previous research reporting that job stress is a very important determinant of intentions to quit (Leontardi and Ward 2002), this analysis could not provide information on the reasons for leaving the labour market.

Conclusion

The negative implications of work stress are recognized as a challenge to both employers and workers, with women, youth, shift, part-time, and non white-collar workers being more likely to have high-strain jobs. Those with such jobs perceived their work to be physically demanding and less satisfying. Low personal incomes and low levels of education were also associated with higher stress.

Work stress can be measured by several indicators. As a result, some variables can at times show differing types of associations with various population groups.

In particular, self-perceived work stress often had a seemingly inverse relationship to other indicators of work stress. For example, white-collar workers were more likely than others to have low job strain and high job satisfaction, yet they also had higher levels of self-perceived work stress. Groups with high self-perceived work stress included middle-aged, married, high income, and high education. It seems workers were more likely to find their work stressful when it was based on their perceived responsibility rather than job strain or dissatisfaction.

Work stress factors have significant cross-sectional and longitudinal associations with job performance. For example, high job strain was associated with reduced activities at work and taking at least one disability day during the previous two weeks; active jobs were also positively associated with taking disability days; and physically demanding work was related to absence from work in the past week. Physically demanding work was associated with reduced activities two years later; active jobs were associated with reduced work activities; and self-perceived job insecurity was associated with subsequent non-employment.

Social support and positive coping mechanisms are protective factors for workers. Many associations between work stress indicators and job performance were mitigated by such factors. On the other hand, negative coping behaviours were likely to increase work impairments. Effective promotion of protective elements and reduction of negative behaviours, on and off the job, may help lessen the effects of work stress on reduced work activities, disability days and work absences.

Perspectives

■ Notes

1. Information on union membership and job permanency was not available in the 2002 CCHS or the NPHS.

2. Further analysis revealed an interesting difference between men and women in the relationship between work hours and physical exertion: among men, full-timers were more likely to perceive their jobs as physically demanding; whereas among women, this was the case for part-timers (data not shown).

3. This finding is inconsistent with previous research that has shown that extended work hours increased work stress especially when combined with shift work (NIOSH 2004; van der Hulst and Geurts 2001).

4. Job dissatisfaction was not included in the regression models due to its close association with self-perceived work stress (cf. Shields 2006).

5. Reduced work activities in the CCHS were based on a response of often or sometimes (versus never) to: "Does a long-term physical or mental condition or health problem reduce the amount or kind of activities you can do at work?"

6. Because of this specific definition, only 85% of the original study population was included: those who did not work due to a permanent disability or lack of a job (possibly caused by illness or injury) were excluded. As well, since those who worked, regardless of hours or types of work, were counted as present, a very low rate of work absence (1.4%) was found. This prevented a full analysis of some issues, and may have precluded statistically significant findings that would have emerged had the sample been larger.

7. Since this analysis could not include workers who might already have left work due to severe effects of work stress during the survey intervals, some work stress effects would not be captured here.

8. Only workers who took no disability days in the baseline survey were included.

9. Unfortunately, the NPHS does not have disability indicators with a longer reference period (e.g. the number of disability days taken in the past year). Such indicators may be more relevant to the measurement of longitudinal effects of work stress.

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Returning to the job after childbirth

Xuelin Zhang

A key family event, the birth of a child has important implications for the mother and the family. But childbirth also has a broader impact, especially in today's economy. Women now make up almost half of the work force, so any wholesale withdrawal by them would have major repercussions at both the micro-economic and the macro-economic levels. To better understand how new mothers balance career and domestic duties, researchers have paid particular attention to post-childbirth employment and earnings and their relationship with job-protected maternity leave and benefit systems.

One study found that about 60% of new Canadian mothers returned to work within six months of giving birth, and about 90% returned to work after one year (Marshall 1999). Another study suggested that maternity benefits (from Employment Insurance) increased the propensity for new mothers to take job leave, while job-protected maternity leave helped mothers return to the pre-childbirth employer (ten Cate 2000). A more recent study concluded that a modest expansion of job-protected maternity leave does not increase the time new mothers stay at home, whereas a substantial expansion of the system does increase the time (Baker and Milligan 2005).

In terms of the effects of childbirth on earnings, estimates of the income difference between Canadian mothers and childless women range from about 13% (Phipps et al. 2000) to a 4 to 5% wage penalty for young mothers after controlling for the differences in work history, labour force attachment, individual worker characteristics and job attributes (Drolet 2002).

Because of data constraints imposed by cross-sectional surveys, most previous research has focused on the short-term effects of childbirth on the employment of mothers. Longer-term effects can best be examined with longitudinal data sources. Using Statistics

Canada's Longitudinal Worker File, this article examines both the short- and the long-term effects of childbirth on the employment, job mobility and earnings of Canadian mothers over the past two decades (see *Data sources and definitions*).

Statutory maternity leave affects post-childbirth employment rates

If a mother stays home for an extended period after childbirth, her propensity to work in the future may be reduced since a long career interruption can affect job skills and chances of finding a new job. The percentage of mothers who return to work in the first post-childbirth year provides a measure of the short-term employment effect of childbirth.[2] Similarly,

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Data sources and definitions

The Longitudinal Worker File (LWF) is a 10% random sample of all Canadian workers, constructed by integrating data from the Record of Employment (ROE), the T1 and T4 files, and the Longitudinal Employment Analysis Program (LEAP). The ROE indicates the reason for a job interruption, of which maternity leave is one. The resulting numbers compare well with those from Statistics Canada's Survey of Labour and Income Dynamics, which covers 1993 to 2004.[1]

The mothers in this study sample were aged 20 to 39 in the year they gave birth, they were employed before taking maternity leave and experienced no other job separation that year, and in the previous year they worked and did not give birth. These restrictions allow the construction of 20 cohorts of mothers (beginning with the 1984 cohort and ending with the 2003 cohort)—with a sample of nearly 300,000 observations. They represent about 86% of all employed women who became mothers in the 1984 to 2003 period.

For each cohort of mothers, a comparison group was established. This cohort of other women satisfied the same restrictions as the mothers, except for giving birth. The comparison group provides a check whether changes in employment or earnings are due to the business cycle, since economic fluctuations should have similar effects on both mothers and the otherwise identical group of women.

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Chart A   Employment rates of mothers consistently lower than those of other women

Short-term employment rates

Employment rates in the second year

Employment rates in the third year
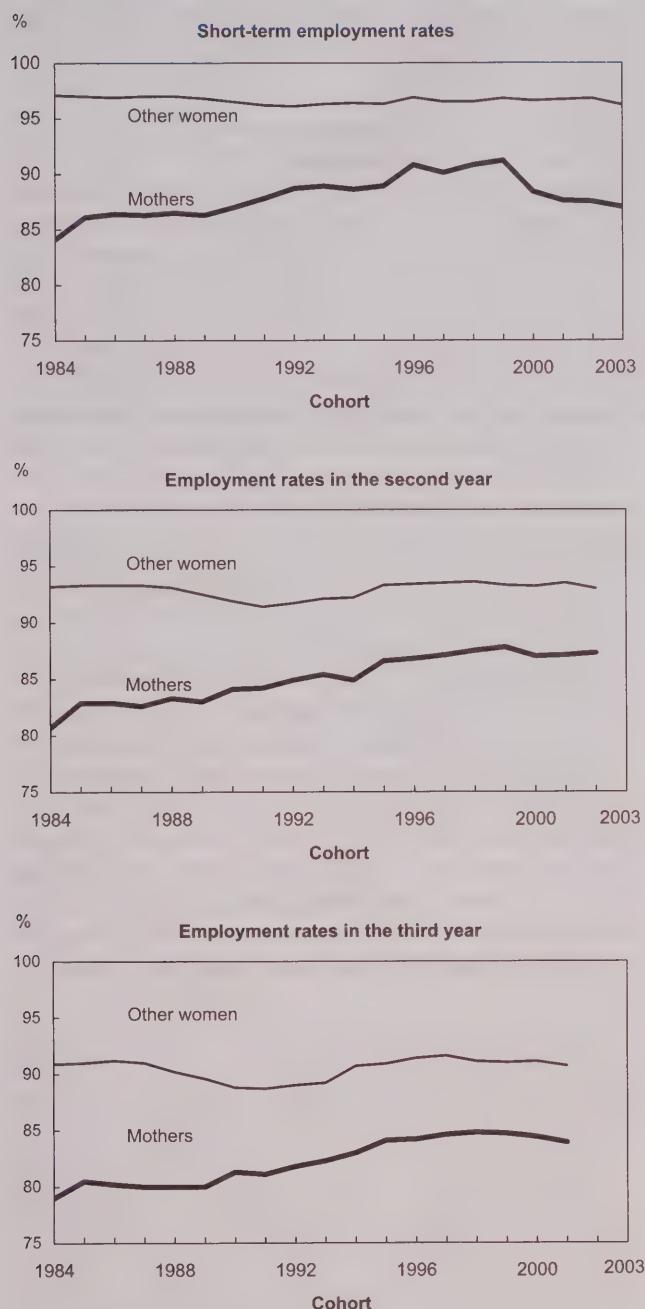
Source: Statistics Canada, Longitudinal Worker File.

employment rates in subsequent post-childbirth years measure the longer-term effects (Chart A).[3] The corresponding employment rates for other women provide a comparison.[4]

Both long- and short-term employment rates of mothers were consistently lower than those of other women. For example, the short-term employment rate of the 1984 cohort of mothers was 84%, 13 percentage points below that of other women. While the employment rate of the 2001 cohort of mothers in 2004 (the third post-childbirth year) was 84%, the corresponding employment rate of their comparison group was 91%. Since the birth of a child increases the marginal costs and reduces the marginal benefits of working, it is not surprising that the post-childbirth employment rates of mothers were generally lower than those of other women.

The short-term post-childbirth employment rates of successive cohorts of mothers increased from the mid-1980s to the end of the 1990s and then started to decline in the early 2000s. For example, for the 1984 cohort of mothers, the employment rate in the first post-childbirth year was 84%. The employment rate reached 91% for the 1999 cohort of mothers, and then dropped to between 87% and 88% for the early 2000s cohorts. This suggests a non-linear relationship between short-term post-childbirth employment rates and the benefits of the job-protected maternity system (see *Job-protected maternity leave*). When protection is short, employment rates of new mothers in the first post-childbirth year are low. When protection is extended moderately, post-childbirth employment rates increase. But when protection is substantially extended to a year or longer, short-term post-childbirth employment rates decline.[5]

The non-linear relationship can be easily explained. Many factors affect a woman's willingness to return to work in the months following childbirth: the scarcity and cost of infant care; the desire to continue breastfeeding; and anxiety about leaving their infant in the care of others. As a result some women with shorter protected maternity leave may choose to stay home and give up their pre-childbirht jobs. Consequently, they would have to look for new jobs when they were ready to return to work and then might face a period of unemployment. But when the job-protected maternity leave becomes moderately long, as occurred during the 1990s in Canada, the above factors would disappear or at least be subdued and post-childbirth employment rates would increase.

Job-protected maternity leave

Job-protected maternity leave legislation in Canada is under provincial jurisdiction. In the 1980s, Canadian mothers had 17 or 18 weeks of job-protected maternity leave within which time their employers were legally obliged to give pre-childbirth jobs back to eligible mothers. In the early 1990s, leave was extended to between 29 and 52 weeks in all provinces except Alberta and Saskatchewan. By the early 2000s, pre-childbirth jobs were protected for 52 to 54 weeks in nine provinces; mothers from Quebec have had a 70-week leave since 1997.

But when the system is extended to more than a year, it becomes feasible for some mothers to take the whole first post-childbirth year off and still retain rights to their pre-childbirth jobs. For example, about 29% of mothers who gave birth in 2000 were from Quebec, Manitoba and New Brunswick. Under their provincial legislation, Quebec mothers were able to retain their pre-childbirth jobs for up to 70 weeks; Manitoba and New Brunswick mothers were able to do so for 54 weeks. Thus, Quebec mothers who gave birth from the second half of August to December, and mothers from Manitoba and New Brunswick who gave birth in the second half of December 2000, were all able to remain off work for all of 2001 and return to their previous jobs as of January 2002—hence the decline in the short-term employment rates for the 2000 cohort. The same explanation applies to the declines in the short-term employment rates of the 2001 to 2003 cohorts.[6]

The long-term post-childbirth employment rates of Canadian mothers increased steadily from the mid-1980s to 1999. A slight decline occurred thereafter. Since the employment rates for the corresponding comparison group also declined after 1999, the levelling off was likely not related solely to childbirth.

Long-term withdrawal rates by Canadian mothers provide an alternative measure for the post-childbirth employment patterns for Canadian mothers.[7] Women who gave birth were less likely to withdraw from the labour market during post-childbirth years in the early 2000s than in the mid-1980s. For example, about 8% of mothers who gave birth in the mid- and late 1980s withdrew from the labour market in the first three post-childbirth years, but in the late 1990s and early 2000s the figure was less than 6%.

Returning mothers less likely to quit

The birth of a child raises work-family balance issues for parents, particularly mothers. Although the tradition that women withdraw completely from the labour market upon giving birth has long gone, some mothers may still quit their jobs due to work schedule inflexibility, commuting difficulties, or lack of child care services.

Quit rates of new mothers and other women both fluctuated over time: mothers who gave birth during the downturn of the economy had lower quit rates than mothers who gave birth during the booming years. But more importantly, when compared with other women, mothers' quit rates, short- or long-term, economic downturn or upturn, were consistently lower, and the differences became more evident over time (Chart B). For example, in the mid-1980s, quit rates of new mothers in the first post-childbirth years were generally below those of the reference group by about 1 percentage point, and by the early 2000s, the difference had increased to more than 3 points.

Mothers having lower quit rates than other women could be anticipated since rates were measured for a group of women who returned to the labour market after giving birth. Those who had not yet returned to work were not part of the population upon which the quit rate is calculated. And on average, it is not unreasonable to assume that mothers who returned to the labour market had stronger labour market attachment, stronger career motivations, or more productive job matches than mothers who had not returned to work (and some of whom may never return), particularly in the longer term. In other words, the quit rates for mothers are defined using mothers with relatively strong labour market attachment and, hence, their quit rates were below the average of other women.

But why the increased differences in quit rates between mothers and other women in the early 2000s compared with the mid-1980s?[8] In part, this can be attributed to the longer job-protected maternity leave system, which helps improve the job-worker match quality. With short job-protected maternity leave, the economic and emotional costs of a quick return to work will convince some women—particularly those with a poor job match—to remain at home. But with longer job protection, it becomes feasible for some mothers to invest time searching for a new job match, knowing they can still return to their

Chart B   Quit rates of mothers consistently lower than for other women

First year after childbirth — Other women, Mothers; Third year after childbirth — Other women, Mothers. (Cohort 1984–2003)
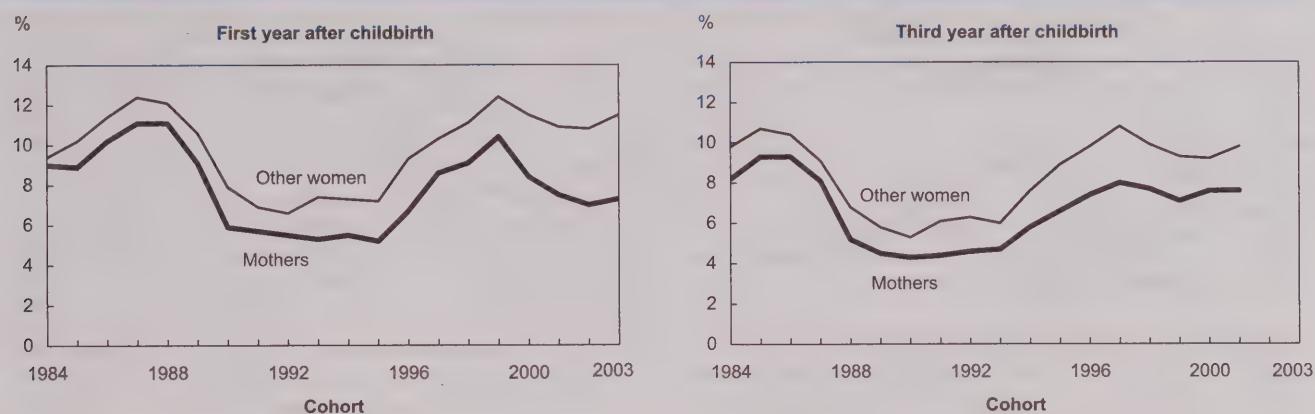
Source: Statistics Canada, Longitudinal Worker File.

pre-childbirth jobs within a given period. Then those who find a new job likely obtain a better job match and their probability of quitting their new jobs is low. Those who choose to return to their pre-childbirth jobs would be more certain about their jobs and they should also be less likely to quit in subsequent years.[9]

Standard human capital theory suggests that returning to the same employer implies little loss of firm-specific human capital or job tenure, particularly for those who returned to their pre-childbirth jobs relatively quickly. Hence, it is interesting to directly examine the proportion of new mothers working for their pre-childbirth employers during post-childbirth years (Chart C). Of course, the likelihood of working for the same employer, for both mothers and other women, was affected by economic fluctuations primarily because less outside opportunity is available in economic downturn than upturn. However, more revealing is that, before 1992, Canadian mothers were slightly less likely to return to their pre-childbirth employers than other women during the first post-childbirth year, the difference being around 2 percentage points. But since 1992, the proportion of new mothers staying with their pre-childbirth employers rose to the same level as that for other women, and from 2001, new mothers became somewhat more likely than other women to stay with their employers.

In terms of the proportion of women staying with the same employers in the longer run, successive cohorts of new mothers were more likely than the reference group to stay with their pre-childbirth employers and the differences stayed relatively constant over the past twenty years. One reason might be that mothers with young children were less mobile than women from the comparison group, the presence of young children perhaps making job change difficult. For example, some working mothers with young children need to make new child care arrangements when changing employers, while for the comparison group (women without children) such a barrier does not exist.

Short-term earnings drop steeper with extended maternity leave...

A simple way to measure the effects of childbirth on the earnings of mothers is to compare their pre- and post-childbirth earnings. This helps answer some interesting questions about the size of immediate earnings drops, the time required to regain pre-childbirth earnings, and the evolution of the earnings recovery process over the last twenty years.

The advantage of this approach is that it requires no strong sampling restrictions and thereby allows the use of a wide sample of Canadian mothers. The main disadvantage is that a simple comparison of pre- and post-childbirth earnings does not reveal the true earnings effects of childbirth since it is not known how earnings would have grown otherwise. Nevertheless, the comparison provides a rough guide to the earnings effects of childbirth.

Chart C   Mothers more likely to remain with the same employer

Working for the same employer one year later

Working for the same employer three years later

Other women

Mothers

Mothers

Other women
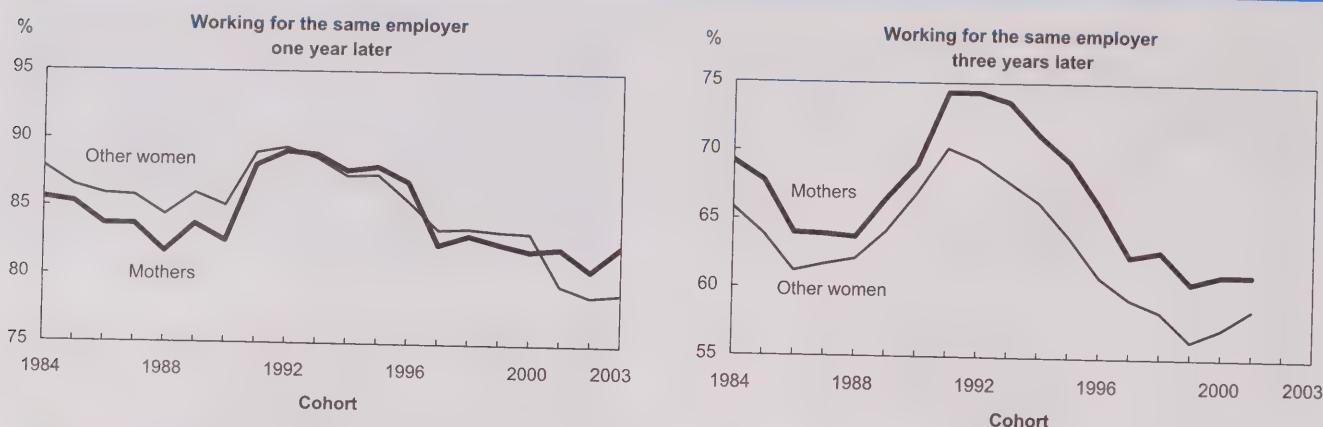
Source: Statistics Canada, Longitudinal Worker File.

Earnings drops for Canadian mothers were quite strong during the year of childbirth and in the first post-childbirth year, and these drops tended to increase over time (Chart D). During the 1980s, the birth of a child lowered earnings by about 28% in the year of childbirth. This increased to 30% in the 1990s, and to about 33% after 2000. And for the first post-child-birth years, the earnings drop relative to the pre-child-birth level was between 14% and 18% before 2001, but about 37% to 39% since then.

The earnings drops in the year of childbirth and in the first year thereafter were mainly the result of changing maternity leave benefits. Prior to 1991, the maximum duration of maternity leave benefits was 15 weeks. Those who gave birth in the first 37 weeks of a year would have been able to collect all of the benefits within the year of childbirth. Assuming childbirth to be uniformly distributed over the year, this group of mothers would account for about 70% ($37 \div 52 = 0.71$) of mothers who gave birth within that year. If they all exhausted their maternity benefits (by collect-ing for 15 weeks) and had no other earnings interrup-tions, they would have lost about 30% of their potential earnings ($15 \div 52 = 0.29$). Mothers giving birth in the last 15 weeks of the year would have incurred less than a 30% earnings drop during the childbirth year, but they would have incurred some earnings drop in the next year.

Similar calculations can be made for other cohorts of mothers. In particular, the large earnings drops in the first post-childbirth year for the 2001 to 2003 cohorts of mothers can be easily understood because, begin-ning in 2001, Canadian parents (primarily mothers) were able to receive Employment Insurance (EI) ben-efits for up to 50 weeks.[10] Then, those who gave birth in the early part of a year were able to collect the ben-efits for almost a whole year, and, as such, the earnings drop during the year of childbirth was now higher than that for mothers who gave birth before 2001. Those giving birth in the second part of the year could continue to collect benefits for a significant part of the first post-childbirth year. And indeed, those giving birth at the end of a year could rely on EI benefits for most of the first post-childbirth year—hence the higher earnings drops in the first post-childbirth year.

...but longer-run recovery is stronger

Earnings of the 1990s and early 2000s cohorts of mothers also recovered faster than those of the mid-1980s cohorts. For example, for the mid-1980s cohorts of Canadian mothers, the earnings five years after childbirth were only slightly above their pre-childbirth earnings. But for mothers who gave birth after the mid-1990s, earnings five years thereafter were generally higher by 10% or more. The faster earnings recovery in the early 2000s may be explained by fac-

Chart D Mothers' earnings recovering more quickly in recent years
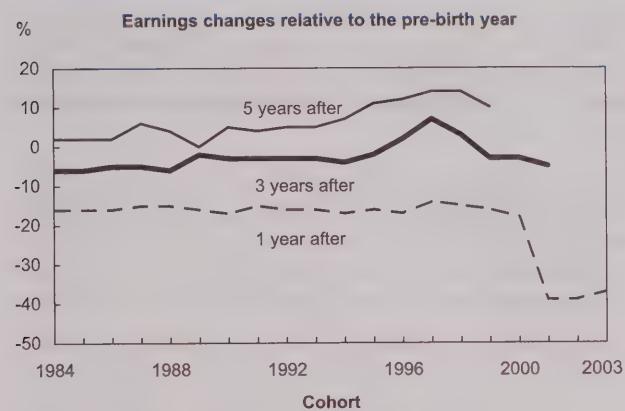
Source: Statistics Canada, Longitudinal Worker File.

tors such as higher education attainment, stronger labour market attachment, greater career motivation and longer job protection. Longer job protection might result in more appropriate job matches, while factors like higher education attainment are associated with steeper earnings growth. On the other hand, longer job protection will also result in longer future work interruptions for subsequent children, which likely accounts for the slight downturns in the 3-year- and 5-year-after curves.

Summary

Long-term post-childbirth employment rates of successive cohorts of Canadian mothers have increased relatively steadily over the last two decades. While short-term post-childbirth employment rates also increased from the mid-1980s to the end of the 1990s, they dropped for the early 2000s cohorts of mothers. Canadian mothers were less likely to quit, and more likely to stay, with their pre-childbirth employers in the post-childbirth years than women from the comparison group. Although earnings drops were greater for the early 2000s cohorts of mothers than for the mid-1980s cohorts, the earnings recovery process was shorter.

Unobserved factors like career motivation resulting from increasing education attainment, as well as institutional factors like an increasingly generous job-protected maternity leave system, have all played important roles in the evolution of post-childbirth employment and earnings trajectories of Canadian mothers during the last two decades.

Perspectives

■ Notes

1. Details can be obtained from the author or the forthcoming research paper.

2. A woman is defined as employed in a year if she had earnings from one or more paid jobs during that year.

3. The horizontal axis of the figure represents different cohorts of mothers and non-mothers. It also measures time (year) implicitly. For example, the 84% for the 1984 cohort of mothers indicates the employment rate of this cohort of mothers in 1985 (the first post-childbirth year). Chart A contains the employment rates in the other post-childbirth years. The employment rates for the comparison groups can be found in the longer version of this study, to be published shortly. Note that these rates will differ considerably from those derived from the Labour Force Survey.

4. Women from the comparison group are also referred to as non-mothers or other women. These were women who did not give birth within the same period of time.

5. This echoes the finding of Baker and Milligan (2005) that a moderate expansion of the job-protected maternity leave system does not increase the time new mothers spend at home, while a significant expansion of the system does increase this time.

6. Probit analyses on both the short- and long-term employment of mothers controlled for age, cohort, employer size, previous earnings and province—none of these variables could explain the employment differences between mothers and other women.

7. A mother is a withdrawer in three (five) post-childbirth years if she did not receive any earnings in those years. A mother who does not work in the first post-childbirth year might just be taking her job-protected maternity leave, and not withdrawing from the labour market.

8. Probit analyses suggest that most of the differences observed in Chart B remain after controlling for age, cohort, industry, firm size, province, etc.

9. Strong labour market attachment and career motivation as a result of increased education attainment may also play an important role in the lower long-term quit rates for the mothers in the long run. But these cannot explain

the large decline in the short-term quit rates for the early 2000s cohorts of mothers since there were no data indicating these factors changed suddenly in the early 2000s.

10. Thirty-five of the 50 weeks (parental leave) can be used by either the mother or the father. In 2002, less than 10% of parental leave benefits went to fathers.

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Immigrants in the hinterlands

André Bernard

R ecent immigrants have experienced more difficulty integrating into the labour market than previous cohorts in the 1970s and 1980s. Since the 1990s, immigrant cohorts have earned significantly less income during their first years in Canada than other Canadians, and earnings growth in subsequent years has not been sufficient to achieve income parity (Frenette and Morissette 2003).

The immigrant population has changed greatly over the last few decades, one of the most dramatic changes being country of origin. Immigrants are now increasingly coming more from Asia (China, India and the Philippines, in particular) than from European countries such as the United Kingdom and Italy or from the United States. As a result, the proportion of immigrants who speak a language other than English or French at home has increased sharply (Citizenship and Immigration Canada 2005a).

At the same time, immigrants with university degrees are becoming more and more common. Of the immigrants who arrived between 1996 and 2001, more than one-third had a university degree, twice the proportion of native-born Canadians (CIC 2005a). Recent immigrants are also much more likely to be 'economic' immigrants, who qualified on the basis of admissibility criteria resulting from policies specifically intended to promote their entry into Canada. Because this should normally result in improved economic outcomes for immigrants, the deterioration observed over the last few years has caused serious concern (Picot, Hou and Coulombe 2007).

One trend, which has garnered considerable attention, is the increasing concentration of immigrants in Toronto and Vancouver. The proportion settling in those two cities rose from 43% for those immigrants admitted before 1986 to 61% for those admitted

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between 1996 and 2001 (CIC 2005a). Even though relatively few immigrants are choosing to settle outside the large urban centres, immigration is attracting a great deal of interest from smaller communities. These communities, especially in rural areas, often face declining populations, and immigration can represent a potential means of revitalizing their economies. A more balanced geographic distribution of immigration is generally acknowledged as being desirable (CIC 2001). Some specific policies have already been put in place to attract more immigrants to rural parts of the country.[1]

Poor economic outcomes of immigrants

This concentration of new immigrants settling in very large urban centres raises the question of the differences between large urban centres and the rest of the

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Chart A Immigrants overwhelmingly opt for Toronto, Montréal or Vancouver

Source: Statistics Canada, Longitudinal Administrative Databank, 2005.

country: could economic integration difficulties simply reflect problems encountered in large urban centres?

Of course, every newcomer to the labour market, immigrant or otherwise, must overcome certain challenges, such as a lack of work experience, a mismatch between knowledge gained in school and industry requirements, and a lack of information on employment opportunities. However, immigrants face additional hurdles, including recognition of foreign qualifications, an even greater lack of information on labour market requirements and employment opportunities, and sometimes an incomplete ability to function in one of Canada's official languages. Discrimination may also also be an issue, since immigrants are increasingly likely to be members of visible minorities (Hum and Simpson 2004).

Income trends, in absolute terms, of immigrants over the years provides an incomplete view of economic integration. High incomes do not necessarily mean rapid integration if incomes of other Canadians are even greater. Relative measures are more meaningful.

Economic integration can be measured through two components: the initial income gap between immigrants and Canadians in general, and the rate at which that gap narrows. Given all of the factors, incomes of immigrants can be expected to be lower in the first years after arrival. However, rapid economic integration would result in the rapid closing of the gap and its elimination within a few years. Because economic integration is a complex process that includes components other than income, like labour force participation, this

measure of economic integration is not the only one that could be examined.

Immigrants less apt to settle in small urban centres

The distribution of immigrants based on five areas defined for this study (see *Data sources and definitions*) is very uneven and does not reflect the distribution of the Canadian population. While approximately 34% of Canadians 20 years of age or older live in one of the three largest urban centres (Toronto, Montréal and Vancouver), approximately 75% of immigrants make these cities their homes. Conversely, while slightly more than 1 in 5 Canadians live in a small town or rural area with a population under 15,000, the corresponding proportion of immigrants is less than 1 in 40 (Chart A).

Immigrants in large cities and those in small towns are not all that different (Table 1). Immigrants in the smallest areas are slightly less likely than other Canadians to hold a university degree. However, they are more likely to have pursued postsecondary studies without obtaining a university degree. Immigrants in small areas are also less likely to be refugees, but the proportions of skilled worker economic class immigrants and family class immigrants are similar in all types of areas. Given that knowledge of an official language is more critical in small areas (because of less linguistic diversity), it is interesting that 1 in 4 immigrants living in a small town or rural area did not have official-language knowledge upon settling there (compared with almost 2 in 5 in very large urban areas).

Table 1 Immigrants by type of area

	Very large	Large	Mid-sized	Small	Very small
	%				
Education					
High school or less	44.9	43.8	44.2	42.5	37.8
Postsecondary	24.5	25.1	25.8	29.8	38.8
University degree	30.6	31.2	30.0	27.7	23.3
Immigrant class					
Economic	24.7	21.3	21.2	23.2	29.0
Family	56.8	54.5	55.1	58.7	59.2
Refugee	10.3	17.3	18.7	11.6	4.8
Other	8.2	6.9	5.0	6.5	7.0
Ability in an official language					
Yes	61.5	59.7	59.0	66.7	74.9
No	38.5	40.3	41.0	33.3	25.1
Country of origin					
Europe	23.3	25.6	31.4	35.7	48.6
Africa	8.3	11.9	8.1	9.0	6.1
Asia	65.6	57.9	52.4	42.4	26.9
Oceania	0.2	0.7	0.8	1.5	2.8
United States	1.0	2.2	4.4	7.7	12.5
Latin America	1.6	1.9	2.9	3.7	3.0

Source: Stastics Canada, Longitudinal Administrative Databank, 2005.

The most striking differences between areas involve country of origin. Immigrants living in small areas come mostly from Europe and the United States, while immigrants in large urban centres come mostly from Asia. Nevertheless, more than 1 in 4 immigrants in the smallest areas come from Asia and the proportions of immigrants from Africa in very large urban areas and small urban areas are similar.

Immigrants generally earn less, but gap smaller in less urbanized areas

For Canadians in general, living in a large metropolitan area means a higher income. Median incomes of Canadians in very large urban areas and large urban areas were $28,100 and $30,500, respectively, compared with $22,500 in small towns and rural areas (Chart B), a significant difference.

For immigrants, the pattern is reversed. Incomes of immigrants were lowest in very large urban areas (median $16,800) and highest in small urban areas (median $19,500), a difference of 16%. Incomes of immigrants in small towns and rural areas (median $18,800) were also significantly greater (by 12%) than those of immigrants in very large urban areas.

Chart B   In relative terms, immigrants fare better in smaller areas

$ ('000)
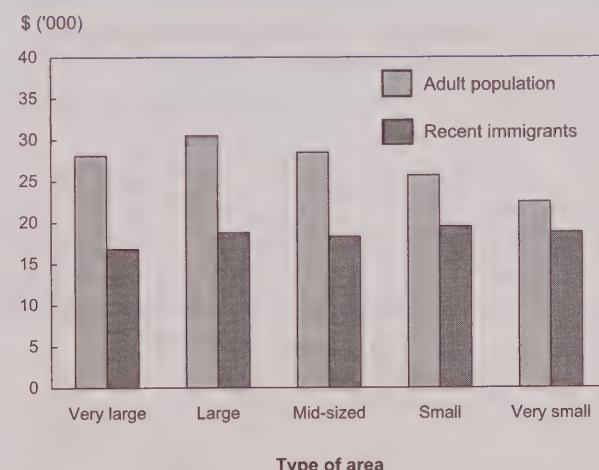
Source: Statistics Canada, Longitudinal Administrative Databank, 2005.

While immigrants have lower incomes in all types of areas, the gap narrows along the gradient from urban to rural. In very large urban areas, the median income gap is very large, at 67%. In small urban areas, the gap falls to 32%, while in small towns and rural areas the gap is only 20%.

Economic integration faster in smaller areas

Economic integration can be examined by starting with the initial income gap between immigrants and Canadians and then measuring the subsequent rate of convergence or equalization over time.

Integration of immigrants in small, less urbanized areas is more rapid and that advantage increases over time. In very large urban areas, the initial income gap is 37%. It gradually decreases, but rather slowly. After four years, the gap is still 22%, falling below the 10-percent threshold in the twelfth year (Chart C). In contrast, in small urban areas, the initial gap is only 14%, and in the fourth year immigrants are earning 2% more than Canadians. The relative advantage of immigrants continues to increase over time, reaching a peak of 18% following the eleventh year.

In small towns and rural areas, the advantage of immigrants is even more pronounced. In their first year of permanent residence, their average income is 4%

Chart C   Integration of immigrants is quicker in smaller areas

Years since establishment

Source: Statistics Canada, Longitudinal Administrative Databank, 1992 to 2005.

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higher than that of Canadians. In the thirteenth year, the relative income advantage of immigrants rises to 19%.

The most vulnerable immigrant groups integrate rapidly in small areas

Immigrants in the smallest areas, while they have diverse characteristics, are more likely to have prior official-language ability and are less likely to have at most a high school education or to be refugees. Immigrant groups with no more than a high school education and groups with no official-language ability, as well as refugees, are examined in greater detail. Analysis of refugees is especially important since they land in Canada under completely different circumstances from that of qualified economic immigrants.

For each group, economic integration is significantly more rapid in smaller areas than in large urban centres. Immigrants with no more than a high school education earn incomes that are 46% lower in very large urban areas, compared with 23% lower in small towns and rural areas (Chart D). The gap closes very slowly in large cities—after 13 years, the gap is still 20%. However, in small towns and rural areas, the gap closes quite quickly, so that as of the fifth year the gap in most years is significantly less than 10%.[2]

The pattern is similar for immigrants without prior ability in one of Canada's two official languages. The initial gap is smaller in small towns and rural areas (31%) than in other areas, especially very large urban areas (50%), and the subsequent increase in the relative income of immigrants is also much faster (Chart E).

Refugees, though they represent only 5% of immigrants in small towns and rural areas, integrate very rapidly—so rapidly that, after only one year, their incomes are 10% greater than that of Canadians living in the same type of area (Chart F). By contrast, refugees in very large urban areas earn 43% less and, after 13 years of residence, the gap is barely under 20%. In other areas, refugees generally earn lower incomes. However, in smaller areas, the gap is not as wide.

Only immigrants from the United States and Oceania integrate better economically in larger centres

Only immigrants from the United States (and to a lesser degree from Oceania) integrate more quickly in economic terms in larger centres than in smaller ones (data not shown). All other immigrants, especially those
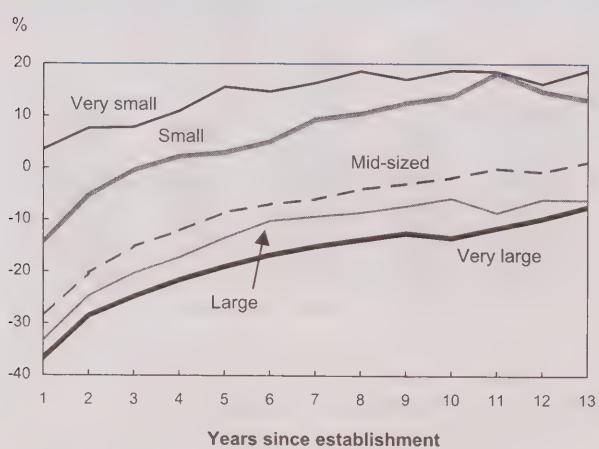
Chart D   Immigrants with less education fare better in smaller areas

%
High school or less

%
Postsecondary

Years since establishment

%
University degree

Years since establishment

—— Very small   - - - - Mid-sized   —— Very large

—— Small   —— Large
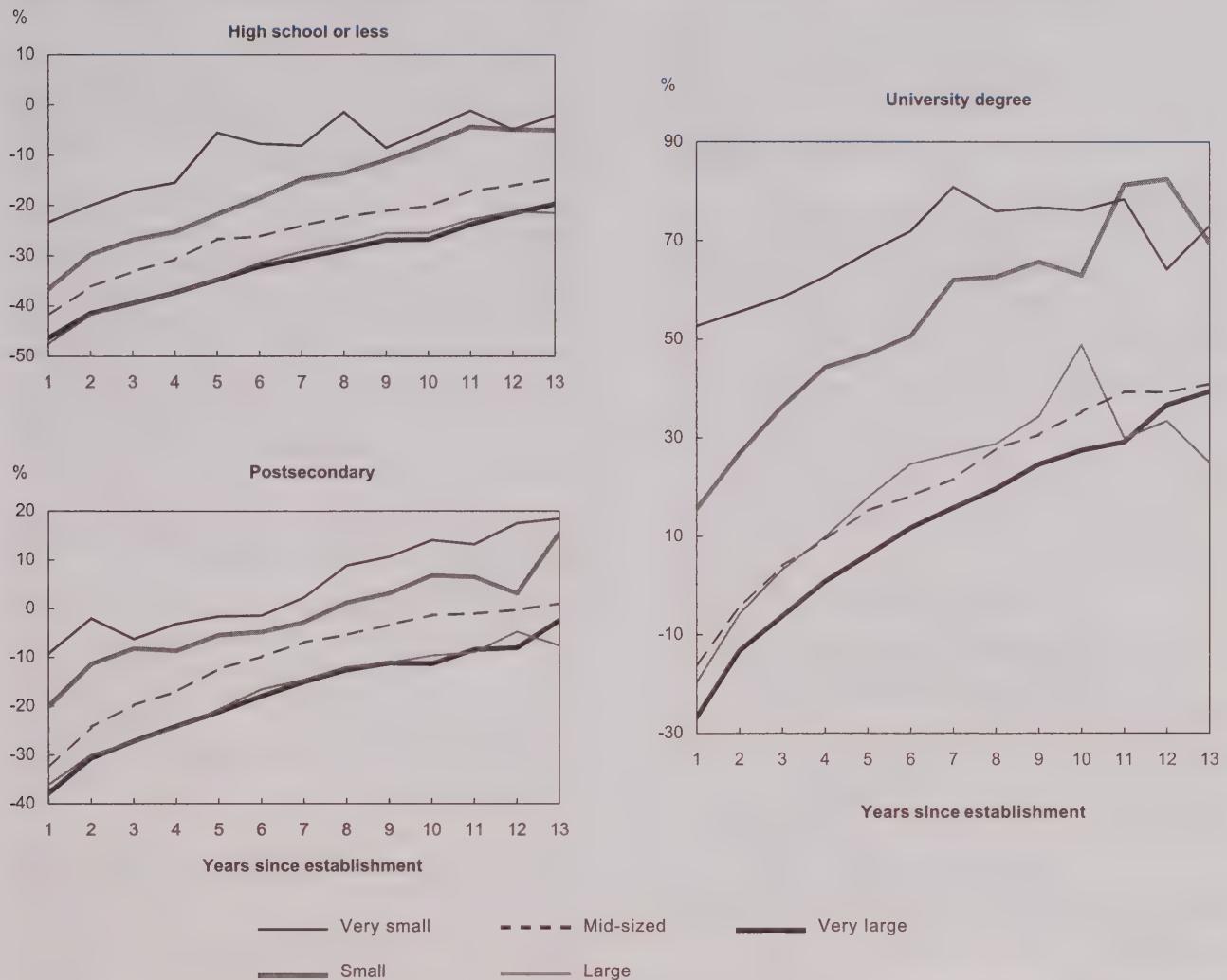
Note: Reflects level of education at time of establishment.
Source: Statistics Canada, Longitudinal Administrative Databank, 1992 to 2005.

from Asia, show a smaller initial discrepancy and subsequent relatively larger increase in income in smaller cities.

Advantages of smaller regions persist after controlling for characteristics of immigrants

Even after taking into consideration the different characteristics specific to immigrants, as well as other observable characteristics common to Canadians, eco-

nomic integration is much faster outside the major urban centres (Table 2; see also *Linear regression*).

Economic class immigrants have difficulty integrating in the major urban centres, regardless of their education, their ability in an official language or their country of origin. For almost every group of immigrant considered, parity had still not been achieved even after 13 years, the maximum observable with the data.

Chart E   Lack of prior ability in an official language is less important in smaller areas

%

Ability in an official language

%

No ability in an official language

Years since establishment

—— Very small	- - - Mid-sized	—— Very large
~~ Small	—— Large	
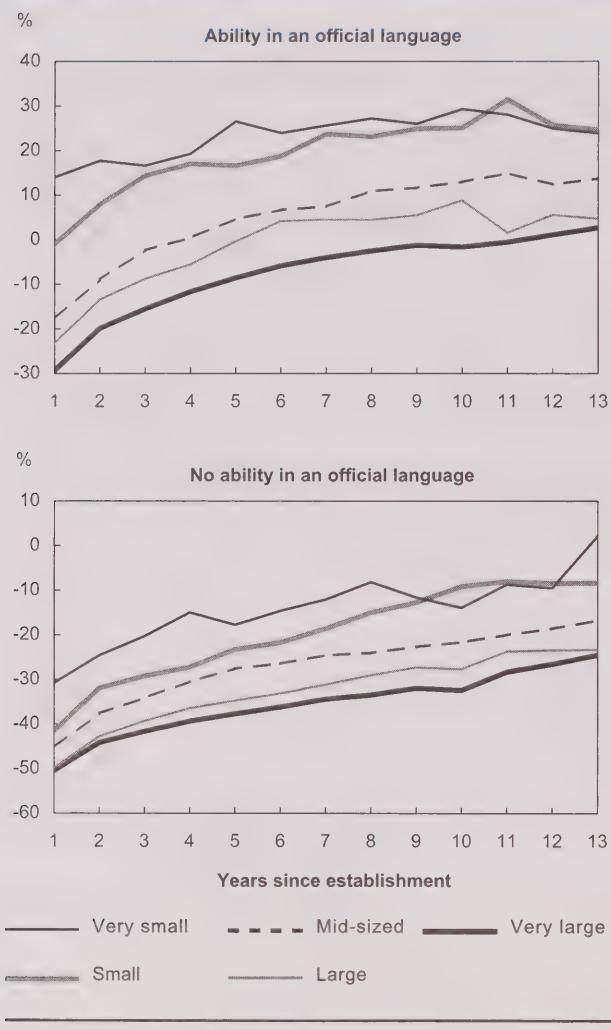
Note: Reflects level of ability at time of establishment.
Source: Statistics Canada, Longitudinal Administrative
         Databank, 1992 to 2005.

In fact, only those with a university degree, ability in an official language and from a region other than Africa and Asia eventually manage to achieve parity—and even then, after seven years.

In contrast, in a small urban or rural area, these same immigrants generally manage to integrate quite rapidly, especially when they have a university degree upon establishment. In fact, every group of immigrants with

a degree achieves parity within at most four years, and some achieve it within the first year. Nonetheless, in many cases economic integration is better in smaller regions even for immigrants with at most a high school diploma upon establishment.

For refugees, the contrast between the larger urban centres and the smaller urban and rural areas is even more striking. In the larger urban centres, none achieved parity within 13 years.

Refugees in the small urban areas, smaller cities and rural areas integrate well from the economic standpoint, particularly those arriving with a university degree. For most groups, refugees in the smaller cities and rural areas achieve income parity very quickly. Those with a university degree achieve it within the first year, regardless of their country of origin or their prior ability in an official language. Refugees with at most a high school diploma do better than those living in the larger urban centres.

Factors in the better economic integration of immigrants in less urban areas

It is difficult to clearly identify the factors accounting for immigrants' better economic integration in smaller urban areas. Because not many characteristics of individuals are available in the database, it is likely that many of the differences identified are only tied to other unobservable factors specific to immigrants, not to the regions.

Nonetheless, some hypotheses merit consideration. The difficulty associated with the recognition of education obtained abroad is well known, and the lack of information about labour market requirements and job opportunities, and the sometimes imperfect ability in one of the official languages, are examples of factors that can slow the economic integration of immigrants.

With regard to education, the impact of university degrees earned abroad on relative incomes is greater in less urbanized regions. It is difficult to determine the extent to which this is because immigrants living in the smaller areas are better able to translate their education acquired abroad into income and/or because a smaller proportion of people with university degrees live in these areas. Based on the 2001 Census, the proportion of university graduates in the adult population aged 25 to 64 years is 30% in the largest urban centres (Montréal, Toronto and Vancouver) and 16% in the areas with fewer than 100,000 inhabitants. Among new

Chart F   Refugees integrate much more rapidly in smaller areas
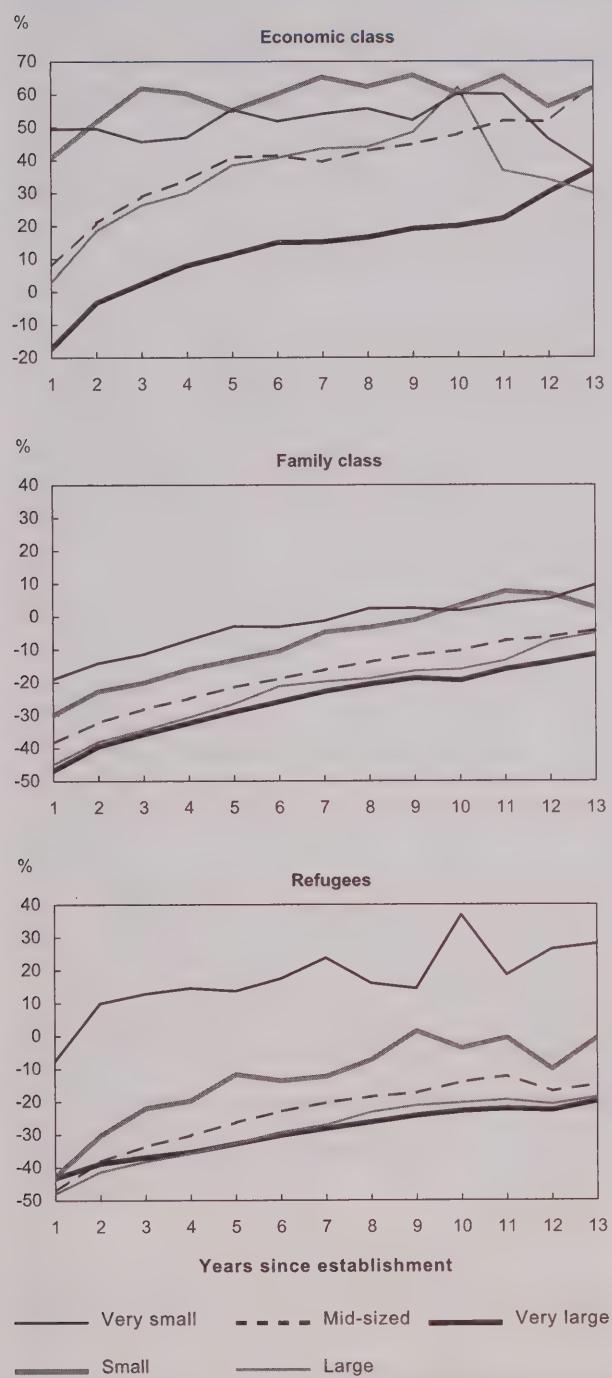
%

Economic class

%

Family class

%

Refugees

Years since establishment

| — Very small | - - - Mid-sized | ▬ Very large |
| ▬ Small | — Large | |

immigrants, the differences according to education upon arrival are much less pronounced (Table 1). Immigrants with university degrees are particularly well represented in the small areas (Chart D), and having pursued postsecondary (not only university) studies abroad greatly improves the advantage of immigrants in the smaller areas. However, even less well-educated immigrants post better results in terms of economic integration in smaller urban areas and the smaller cities and rural areas.

The need for information about labour market requirements and job opportunities suggests that the creation of a network—formal or informal—with non-immigrants would likely be inevitable in smaller areas, precisely because of the smaller proportion of immigrants there. In return, this network may be critical to economic integration, even if the small proportion of immigrants may be a source of other kinds of disadvantages. This does not mean that immigrants living in smaller regions will not face the same difficulties inherent to the local labour market as any of their neighbours. Rather, they will be less likely to be at a disadvantage than immigrants in the major urban centres merely because they are immigrants.

Lack of ability in an official language is not as great a handicap outside the major centres. In the largest urban centres, none of the groups of immigrants without ability in an official language managed to achieve income parity after 13 years. In smaller cities and rural areas, several groups, in particular refugees, managed to achieve it. One could conclude that these immigrants are more likely to learn one of the official languages quickly if they live in an area with a high proportion of French- or English-speakers. This enables them to overcome this barrier more rapidly than in the larger urban centres.

To a large extent, the data also rule out at least one other possible hypothesis. Even though immigrants living in smaller cities and rural areas are more likely to come from Europe and the United States, this does not explain why they do better than immigrants in the major urban centres. The raw regressions suggest that in smaller cities and rural areas, the impact of country of origin on income advantage is very small, and does not necessarily favour immigrants from Europe, the United States or Oceania. Also, immigrants from the United States are the only ones to have integrated more rapidly from an economic standpoint in the larger urban centres. In other words, it is very likely that the

Table 2 Number of years to achieve income parity by admission category

Immigrant	Education on landing	Prior ability in an official language	Type of area				
			Very large	Large	Mid-sized	Small	Very small
Economic					years		
Europe, United States or Oceania	High school or less	no	>13	>13	11	11	>13
Africa and Asia	High school or less	no	>13	>13	>13	>13	>13
Latin America	High school or less	no	>13	>13	>13	>13	>13
Europe, United States or Oceania	High school or less	yes	>13	5	6	7	11
Africa and Asia	High school or less	yes	>13	>13	>13	11	7
Latin America	High school or less	yes	>13	11	>13	11	>13
Europe, United States or Oceania	University degree	no	>13	5	5	2	2
Africa and Asia	University degree	no	>13	>13	>13	3	1
Latin America	University degree	no	>13	11	>13	4	4
Europe, United States or Oceania	University degree	yes	7	2	3	1	1
Africa and Asia	University degree	yes	>13	5	11	2	1
Latin America	University degree	yes	7	4	9	2	1
Refugees							
Europe, United States or Oceania	High school or less	no	>13	>13	>13	>13	>13
Africa and Asia	High school or less	no	>13	>13	>13	>13	10
Latin America	High school or less	no	>13	>13	>13	>13	>13
Europe, United States or Oceania	High school or less	yes	>13	>13	>13	>13	4
Africa and Asia	High school or less	yes	>13	>13	>13	>13	2
Latin America	High school or less	yes	>13	>13	>13	>13	6
Europe, United States or Oceania	University degree	no	>13	>13	>13	7	1
Africa and Asia	University degree	no	>13	>13	>13	11	1
Latin America	University degree	no	>13	>13	>13	13	1
Europe, United States or Oceania	University degree	yes	>13	11	>13	3	1
Africa and Asia	University degree	yes	>13	>13	>13	7	1
Latin America	University degree	yes	>13	>13	>13	7	1

Note: Reference to ">13" means that 13 years after establishment, which is the maximum allowed to be considered with the data, these immigrants still had an unfavourable income gap.
All of the regression coefficients used for these calculations are significant to a threshold of 1% or more, with two exceptions. These are the coefficients associated with Latin America (definitive outcomes for Europe, the United States and Oceania), for the very large urban areas (not significant for conventional thresholds) and for small cities and rural areas (significant to a threshold of 5%). If the coefficient is not significant, it is assumed to be zero, therefore its value does not have an effect on these findings.
Source: Statistics Canada, Longitudinal Administrative Databank, 1992 to 2005.

discrepancies identified would be even larger if the distribution by country of origin in the smaller cities and rural areas were closer to that in the larger urban centres.

Naturally, several factors could affect immigrants' ability to integrate. These include, in particular, their formal or informal reception by government and community, any discrimination they may face, and their motivation to integrate into the labour market. None of these can me measured from the data.

Discrepancies stable between urban and rural areas

The three cohorts of immigrants studied show a surprising stability in the differences between urban and rural areas over time. From 1994 to 1996, the relative incomes of immigrants who arrived in 1992 and 1993

Linear regression

Regression models are used to measure how certain key factors account for a phenomenon after controlling for other observable characteristics. This study used an ordinary least squares linear regression model:

$$Ln(y_{itr}/Y_r) = \alpha + \beta_1 X' + \beta_2 IMMIGRANT + \beta_3(YEARS)' + \beta_4(ORIGIN)' + \beta_5(EDUCATION)' + \beta_6(CLASS)' + \beta_7(LANGUAGE)' + \varepsilon_{itr}$$

The dependent variable is a measure of the individual's income advantage. This is the ratio of, on the one hand, individual i's income in year t in region r and, on the other hand, the median income (Y) of the entire population in region r (median income in constant dollars, all years combined).

A ratio of one indicates parity between the income of an individual and that of his/her neighbours; a ratio higher (lower) than one indicates a relative advantage (disadvantage) in terms on income. To facilitate the calculations, we used the logarithm of the ratio as the dependent variable for the regression. This way, the explanatory variable coefficients could be added and interpreted as the percentage impact on the ratio, or, in other words, the impact in percentage terms on the income advantage. The construction of this dependent variable is similar to that of Li (2003). Only individuals whose incomes are greater than $1,000 are included in the regression models (as in the descriptive tables), in order to exclude those who are not in the labour market or are dependents.

The regression considers every individual, not only immigrants. Thus, there are two types of explanatory variables. The control variables that are common to immigrants and to all other Canadians are included in vector X. Unfortunately, the administrative data used only contain a limited number of variables on the characteristics of individuals. Nonetheless, the individual's province of residence, type of family, age group and sex are included in the model. Dichotomic variables for every year from 1992 to 2005 are also included in order to account for the impact of the business cycle.

The other explanatory variables included in the model are strictly for immigrants. First, there is a dichotomic variable identifying immigrants as such. This variable identifies an initial impact of immigration in terms of income advantage (or disadvantage). Next, the dichotomic variables are included, representing each of the years following their arrival (starting with the second year). These variables are included in the YEARS vector. Because the data cover years 1992 to 2005, immigrants can be followed for up to

13 years after their arrival (for immigrants who arrived in 1992). The coefficient for the variable identifying immigrants provides an indication of the 'income discrepancy upon establishment' (a coefficient that is assumed to be negative), while the coefficients associated with the different years since establishment provide an indication of the 'catch-up speed' (coefficients assumed to be positive) in the incomes of immigrants with those of all Canadians living in the same type of area.

Other control variables specific to immigrants are added to take the different characteristics among immigrants living in the major urban centres and those living elsewhere in the country into consideration. This variable identifies the admission class of the immigrant (economic class, family class, refugee and other), prior knowledge of an official language, level of education at the time of arrival, and the immigrant's country of origin. All of these variables specific to immigrants (including the number of years since establishment) are multiplied by the indicator (using a value of 0 or 1) identifying immigrants, which is zero for all other Canadians.

Income parity between immigrants in a certain class and all Canadians in the same type of area is considered achieved after a certain number of years when the coefficient associated with the status of immigrant, added to the coefficient associated with the number of years since arrival, is equal to or greater than zero, which means that the catch-up after arrival was enough to make up for the initial unfavourable income discrepancies. To do this calculation for every group of immigrants, the coefficients associated with the different targeted characteristics—which is to say the coefficients associated with the CLASS, LANGUAGE, EDUCATION and ORIGIN variables—have to be added up.

Three more regressions are done to determine whether the differences between urban and rural areas are accentuated or reduced during the period under study. For the most part, the form of these regressions is comparable. However, the data on all types of regions are grouped and the variables identifying the regions are included in the model, while the variables identifying the number of years since arrival are omitted. Thus, the coefficients associated with the different types of regions represent the average of the income advantages associated with the types of regions. The three regressions help compare the change in results for three cohorts of immigrants: those who arrived in 1992 and 1993, those who arrived in 1997 and 1998 and, finally, those who arrived in 2001 and 2002.

were 32% higher in smaller cities and rural areas than in the largest urban centres. For those who arrived in 2001 and 2002, this difference was only slightly smaller, 27% for the years 2003, 2004 and 2005. The comparative advantage of the largest urban centres edged up from 24% to 25% (data not shown).

Conclusion

The economic well-being of immigrants is critical for a country like Canada, which relies heavily on immigration for demographic growth. Where immigrants choose to settle appears to affect their economic integration. It is much faster outside the largest urban cen-

tres, which is where most of them settle. In contrast, the incomes of those who choose to settle outside these major centres are similar to those of other Canadians. This initial disadvantage of immigrants, when it exists, generally disappears after a few years.

In contrast, in the largest urban centres, immigrants face a large initial income disadvantage, and subsequent increases are not enough for them to achieve parity. Better economic integration of immigrants outside the largest urban centres is evident even after taking into consideration differences in terms of immigrants' education upon arrival, prior ability in an official language, admission class and country of origin.

These results put the large income differences between recent immigrants and other Canadians, identified in previous studies, into perspective. These differences appear, at least in large part, to result from a dynamic exclusive to the largest urban centres.

Immigrants living outside the largest urban centres can translate their credentials acquired abroad into a relative income advantage more easily. They are more likely to overcome their lack of ability in an official language, quickly learning English or French, enabling them to increase their ability to generate income faster.

Perspectives

Notes

1. For example, the federal government recently announced new measures to attract French-speaking immigrants to rural parts of Prince Edward Island (CIC 2007). The *2005 Annual Report to Parliament on Immigration* (CIC 2005b) has already recognized the potential of the Provincial Nominee Program for "supporting the regionalization of immigrants to centres outside Canada's three largest cities" (page 18).

2. The variable used measures education upon landing only. Further education, not observed here, is probably an important contributor to these patterns.

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The dynamics of housing affordability

Willa Rea, Jennifer Yuen, John Engeland and Roberto Figueroa

Shelter is the biggest expenditure most households make and its affordability can have an impact on wellbeing. For this reason, housing affordability is closely watched by a wide range of stakeholders—from housing advocates to policy analysts—interested in housing and the broader welfare of Canadians.

Measuring affordability involves comparing housing costs to a household's ability to meet them. One common measure is the shelter cost-to-income ratio (STIR). The 30% level is commonly accepted as the upper limit for affordable housing. Those who spend 30% or more have been, and continue to be, the subject of intense study—do they do so out of choice, having the means and preference to spend more than the norm; or out of necessity, having low income and possibly being in housing need.

Housing affordability is also a critical input to Canada Mortgage and Housing Corporation's (CMHC) core housing need indicator.[1] The core housing need indicator "identifies those households unable to obtain market housing that is in adequate condition, of suitable size and, at the same time, affordable" (CMHC 1991). The information is used by governments to help design, deliver, fund and evaluate social housing programs.

Up to now, STIRs have described affordability at a particular point in time. No source followed households over time, collecting both incomes and shelter costs. While Statistics Canada's Survey of Labour and Income Dynamics (SLID) provides household income over a six-year period, it does not normally collect data on shelter costs. So, for the last five years, CMHC has sponsored a module of housing questions and now this information enables a first-ever longitudinal review of housing affordability (see *Data sources and definitions*).

This report, co-authored by CMHC and Statistics Canada, focuses purely on the dynamics of housing affordability, not on core housing need. It examines the likelihood of spending 30% or more of household income on shelter, how often this occurs, whether it is occasional or persistent, and contrasts those spending 30% or more to those spending less.

Housing affordability profile

Cross-sectional estimates indicate that around one-fifth of Canadians lived in households spending more than the affordability benchmark in any one year between 2002 and 2004. Longitudinally, however, less than one-tenth lived in households that persistently spent above the benchmark between 2002 and 2004. Another one-

Chart A   Less than 10% of people lived in households persistently exceeding the affordability benchmark

- One year 12.4%
- Two years 7.0%
- Three years 8.6%
- Never 71.9%
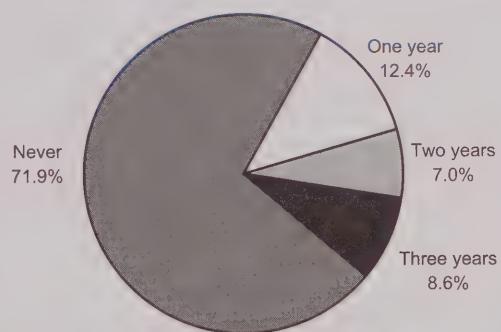
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2002 to 2004.

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Data sources and definitions

The **Survey of Labour and Income Dynamics** (SLID) is a household survey that uses computer-aided telephone interviews to collect information on income, labour, education and, since 2002, housing. Between January and March, interviewers collect information from the previous calendar year regarding labour experiences and income, educational activity, and family relationships. Demographic characteristics of family and household members, and information about their dwellings and shelter costs represent a snapshot as of the end of each calendar year. The response rate averaged 77% during the three-year study period covered in this report. SLID covers all individuals in Canada, excluding residents of the three territories, residents of institutions and persons living on Indian reserves or in military barracks, and those who are homeless. Overall, these exclusions amount to less than three percent of the population.

SLID samples are selected from the monthly Labour Force Survey (LFS) and thus share the latter's sample design—an area frame and a stratified, multi-stage design that uses probability sampling. The total LFS sample is composed of six rotation groups, with one-sixth of the sample being replaced each month. The SLID sample comprises two panels, each consisting of two LFS rotation groups—roughly 17,000 households. A panel is surveyed for six consecutive years. A new panel is introduced every three years, so two panels always overlap.

SLID provides both cross-sectional and longitudinal estimates. The longitudinal estimates in this report are based on two panels covering the years 2002 to 2004—the last three years of panel 3 and the first three years of panel 4.

Shelter cost-to-income ratio
Owner shelter costs include mortgage payments, property taxes, condominium fees, and utility payments[2] (heating, water and electricity). Renter shelter costs consist of rent payments plus any utilities not included in the rent. Total annual household shelter costs are compared with total annual before-tax household income, which includes transfers from government. Income is collected for each person 16 years of age and over and then aggregated into household income. Approximately 85% of SLID respondents allow the use of their tax data as an alternative to answering the survey questions, improving data quality and reducing response burden.

Households spending less than 30% of their incomes on shelter are classified as meeting the affordability standard. However, those spending 30% or more are not necessarily experiencing housing affordability problems. Many who spend a higher percentage do so by choice.

CMHC's 'core housing need' classifies only those who could not afford suitable and adequate housing in their locality as being in housing need. Based on this indicator, 20% of *households* in the 2001 Census spent more than the housing affordability standard, but only 12% were in core housing need.

The study universe
For longitudinal analysis, it is necessary to work at the person level rather than the household level since the household universe is dynamic. Households form, change, and dissolve due to birth, marriage, divorce, death, and the comings and goings of members, making it difficult to follow households over time. Therefore, household characteristics (including shelter costs, incomes, and STIRs) are attached to each household member.

Results present the numbers and percentages of people living in households with the various characteristics. To facilitate comparisons between longitudinal and cross-sectional estimates, most of the cross-sectional analysis was also done at the person level.

Certain exclusions from the population were necessary. The first step, for longitudinal analysis, was to eliminate persons not present for all three years.

To simplify interpretation, people in the following households were also excluded: those with household incomes or shelter costs less than or equal to zero, those where a household member operates a farm, and those with more than one economic family (i.e. at least one person in the dwelling was not related by blood, marriage or adoption). This removed approximately 8% of the sample from cross-sectional analysis with the largest exclusion coming from the third criterion.

Positive incomes and shelter costs are essential to interpret the STIR. Households can report negative incomes when, for instance, income from self-employment or investment includes losses that are larger than gains. Such households usually depend on alternative monetary sources such as loans, savings or capital gains. But these data are not collected in SLID, so it is not possible to assess how much money the household has to live on. Similarly, it is difficult to interpret the STIR if a household reports that it pays nothing for shelter when, for example, the use of a dwelling comes as part of employment compensation.

Farm operators are excluded because their shelter costs and farm operating costs may be so blended together that it is hard to obtain a reliable estimate of the actual shelter cost.

The exclusion of households with more than one economic family was done because the members of some of these households may make their housing decisions at the family or individual level and any household level estimate might be difficult to interpret. (A household consists of all the people living in a dwelling, whereas an economic family consists only of those who are related by blood, marriage or adoption living together in a dwelling.) In a roommate household, each of the roommates would have different incomes, although each might share the rent equally. A STIR calculated based on their total shelter costs and the sum of their incomes would not have the same meaning as a STIR calculated for a family or an individual living alone.

Finally, the models were run only on the adult population (16 years of age and over), because certain questions (for example, about Aboriginal status, immigration status and education level) are not asked of those under age 16.

Sample distribution for the models
The first model compared the characteristics of those who ever (at least one year between 2002 and 2004) spent 30% or more of household income on shelter with those who never did so.

The second model focused on the population persistently spending 30% or more of household income on shelter, in this case for the full 3-year study period. The sample was divided into *persistently* and *never + occasionally*.

Model 1 regresses the *ever* indicator and Model 2 regresses the *persistently* indicator against the socio-demographic and geographic characteristics of Canadians and the households in which they live. Income was not included in the models because it is part of the calculation of the characteristic of interest—STIR.

fifth lived in households occasionally (one or two years) spending above the benchmark. In total, about 28% lived in households that *ever* exceeded the affordability benchmark during the study period (Chart A).

Lower-income households more likely to exceed housing affordability benchmark

Household income is a key determinant of STIR. On average, income-constrained households have higher shelter cost burdens and are more likely to surpass the affordability benchmark. In fact, in 2004 over 80% of people in households exceeding the benchmark fell into the bottom 40% of the income distribution (Table 1). In contrast, those with incomes in the top 40% accounted for only about 7% of people exceeding the affordability benchmark—likely spending more out of choice, not necessity.

Nearly 58% of people in the lowest income group lived in households spending more than the affordability benchmark. Their median STIR, around 50%, tends to be a consequence not only of their low income but also of their relatively high shelter costs.[3] For owners it may be because of high mortgage payments—once mortgages are paid off, STIRs naturally drop considerably. Tenants may find that, unless they are in subsidized housing, accommodation cannot be obtained below a certain rent. In addition, families in this situation may live in cities with more expensive housing, need a bigger dwelling to accommodate a larger family, or lack the social or financial resources to seek less expensive accommodation.

The most obvious reason for low household income is a low-paying job, but other causes are also possible: only one earner, family breakup, job loss, and business or investment losses (especially for the self-employed). Some households with low income may have other revenue sources—capital gains, savings, loans, gifts or even charitable support.

In addition, some of these high STIRs are only transitory. Finding a job, getting married or moving are examples of events that could lower the STIR. Longitudinal data enable the identification of households making these transitions and tracking movements above and below the benchmark. Instead of considering households above or below the affordability benchmark at a given point in time, it is possible to see whether they are above or below the benchmark for one, two or three years (Table 2).

Like cross-sectional estimates, the longitudinal numbers show that as household income increases, a lower proportion of people live in households that ever spend above the affordability benchmark. However, these estimates are higher than annual estimates. As would be expected, over a longer period of time, more people live in households spending above the affordability benchmark.

In addition, the higher the income, the greater the percentage difference between the longitudinal and cross-sectional estimates. As household income increases, the turnover or change in those living in

Table 1 Cross-sectional estimates of people living in households spending above and below the affordability benchmark by income quintile, 2004

	Share within income quintile	Cumulative share spending 30% or more	Shelter cost	Household income	STIR
	%	%	$	$	%
Bottom 20%					
30% or more	57.9	57.4	9,000	17,417	51.0
Less than 30%	42.1	...	4,416	24,742	20.1
Second quintile					
30% or more	23.5	80.6	15,983	39,887	39.3
Less than 30%	76.5	...	6,720	41,625	16.5
Middle quintile					
30% or more	12.7	93.2	23,233	62,323	36.0
Less than 30%	87.3	...	9,426	62,949	15.0
Fourth quintile					
30% or more	5.2	98.3	31,258	87,196	34.6
Less than 30%	94.8	...	12,104	88,671	13.7
Top 20%					
30% or more	1.7	100	44,570	124,383	35.2
Less than 30%	98.3	...	13,823	135,885	9.6

Note: Household income not adjusted for family composition and size.
Source: Statistics Canada, Survey of Labour and Income Dynamics.

households spending 30% or more on shelter also increases. People with higher incomes do not tend to spend above the benchmark repeatedly or persistently. Instead, new people are entering as others are leaving the group from one year to the next, which leads to the higher longitudinal estimates.

Another way of looking at this is through the share of those persistently (all three years) exceeding the affordability benchmark compared with those ever exceeding it (at least one year). In the lowest income group, almost half of those ever exceeding the benchmark did so for all three years. In contrast, only 7% of those with the highest incomes did so. Thus, the higher the income, the larger the proportion of people moving back and forth across the affordability benchmark, indicating that the causes of exceeding the benchmark may often be temporary. But in the lower income groups, especially the lowest, a much higher proportion have STIRs persistently exceeding the benchmark, indicating less ability to adjust incomes or shelter costs.

Who exceeds the affordability benchmark most often?

As expected, a higher proportion of renters spend above the affordability benchmark (Table 3). In 2004, roughly one-third of renters (paying either market or subsidized rent) lived in households spending above the affordability benchmark, compared with less than one-quarter of owners with mortgages and 1 in 25 owners without mortgages. Longitudinally, well over 40% of renters ever exceeded the benchmark over the 2002 to 2004 period, a much higher proportion than for owners. Those changing tenure during

Table 2 Longitudinal estimates of people living in households spending above and below the affordability benchmark by income quintile, 2002 to 2004

	Share within quintile income	Shelter cost	Household income	STIR
	%	$	$	%
Bottom 20%				
Less than 30% all 3 years	37.3	4,216	27,341	17.9
30% or more 1 or 2 years	32.4	7,195	24,113	32.2
30% or more all 3 years	30.2	9,920	19,109	52.7
Second quintile				
Less than 30% all 3 years	62.8	6,413	44,756	14.9
30% or more 1 or 2 years	29.5	12,205	43,652	30.2
30% or more all 3 years	7.8	18,491	42,166	43.2
Middle quintile				
Less than 30% all 3 years	77.5	9,118	64,239	14.5
30% or more 1 or 2 years	18.9	16,375	62,604	28.0
30% or more all 3 years	3.7	24,907	63,138	39.1
Fourth quintile				
Less than 30% all 3 years	86.2	11,663	88,763	13.6
30% or more 1 or 2 years	12.7	21,184	84,724	26.7
30% or more all 3 years	1.1	33,136	86,870	35.6
Top 20%				
Less than 30% all 3 years	95.8	13,861	131,817	10.3
30% or more 1 or 2 years	3.9	29,552	126,971	26.2
30% or more all 3 years	0.3	39,885	113,379	35.2

Note: Household income not adjusted for family composition and size.
Source: Statistics Canada, Survey of Labour and Income Dynamics.

this period were much more likely ever to exceed the benchmark, but less likely to exceed it persistently. While this indicates that changing tenure could be associated with temporary affordability difficulties, the study period is too short to properly understand all the dynamics.

Those living alone and female lone-parent families are the most likely to spend above the benchmark: 42% and 44% respectively in 2004, more than double the proportion in the population as a whole (20%). Those living alone must pay the entire shelter cost themselves and rely on only one income; those supporting children alone face the additional challenge of needing to pay for larger accommodation.

Those whose family type changed over the 2002 to 2004 period are among the most likely ever to spend above the benchmark (39%), compared with the national average (28%). As with tenure-changers, their three-year rate (7%) was very much lower, and below the national average.

Other attributes—years since immigration, visible minority status, and certain geographical locations—also seem to be associated with higher rates of ever or persistently exceeding the affordability benchmark. Recent immigrants, in particular, notably exceeded the benchmark, both cross-sectionally and longitudinally. Their percentages declined as time in Canada increased.

Table 3 Cross-sectional and longitudinal rates of exceeding the affordability benchmark

	Cross-sectional			Longitudinal	
	2002	2003	2004	Ever	Persis-tently
			%		
Both sexes	**19.4**	**19.6**	**20.0**	**28.1**	**8.6**
Men	18.5	18.6	19.2	26.5	7.6
Women	20.3	20.6	20.8	29.7	9.6
0 to 19 years old	21.5	21.5	21.9	30.7	9.8
20 to 29 years old	21.3	21.6	21.7	33.1	6.5
30 to 49 years old	19.3	19.9	20.3	28.1	8.7
50 to 64 years old	16.9	16.9	17.7	23.5	7.9
65 years old or more	16.8	17.0	16.9	24.4	9.3
Owners, with mortgage	21.5	22.0	23.1	30.5	10.2
Owners, without mortgage	3.5	3.6	4.0	5.9	1.1
Owners, change in mortgage status	...	...	...	24.9	0.8
Renters, market	32.0	38.4	34.3	43.1	19.2
Renters, subsidized	33.9	32.7	33.1	45.1	15.1
Renters, change in subsidy status	...	...	...	56.4	24.3
Changed tenure	...	...	...	42.8	6.5
Ottawa-Gatineau	16.1	20.6	19.4	23.8	7.3
Toronto	23.9	25.2	28.9	36.0	11.9
Vancouver	30.7	30.3	33.1	44.0	16.4
Montréal	20.8	17.2	17.4	25.3	9.0
Calgary	15.3	21.3	18.6	26.8	8.1
Edmonton	16.7	16.4	13.7	24.9	5.5
Victoria	22.2	23.5	21.7	30.5	8.8
Other CMAs	18.0	17.9	17.3	24.8	7.5
Rural	13.4	14.1	14.8	20.5	5.7
Moved between these places	...	...	...	41.4	6.6
Married, without children	11.7	11.8	11.6	16.0	4.2
Married, with children	15.8	16.5	17.5	24.3	7.3
Unattached individual	40.9	41.3	41.6	46.9	22.9
Female lone parent	48.6	45.2	44.2	57.4	27.6
Male lone parent	27.8	24.8	27.4	25.7	12.8
Other family type	17.7	18.2	18.5	23.6	5.3
Changed family type	...	...	...	38.6	7.1
Disabled	23.1	22.6	23.4	30.1	10.5
Not disabled	17.5	17.8	18.1	25.8	6.8
Aboriginal	23.6	25.2	23.4	36.7	10.4
Non-aboriginal	18.6	18.7	19.1	27.0	8.0
Visible minority	28.6	29.8	31.3	43.7	13.2
Not visible minority	17.4	17.4	17.6	25.1	7.4
0 to 9 years since immigration (2002)	36.5	36.9	37.6	54.0	17.3
10 to 19 years	27.7	31.4	33.1	39.5	14.1
20 to 29 years	24.2	23.0	25.1	35.7	10.3
30 to 39 years	19.0	16.4	19.2	24.6	7.8
40 years or more	14.4	16.7	14.5	22.3	6.8
Non-immigrant	18.4	18.5	18.8	26.7	8.1
Some high school	20.6	20.9	20.8	29.4	9.5
High school graduate education	18.7	18.8	19.8	27.6	8.1
Postsecondary without certificate	21.1	21.1	20.8	30.1	9.1
Postsecondary with certificate	16.8	16.9	17.9	25.3	7.3
Bachelor's degree	14.0	15.3	14.4	21.1	5.5
Postgraduate degree	15.4	12.3	13.7	19.3	5.2

Note: Characteristics constant all three years for longitudinal estimates.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2002 to 2004.

Geographically, Vancouverites were more likely to live in households exceeding the benchmark, 33% in 2004 and 44% ever over the three years. Like those who changed tenure or family type, a relatively high percentage (41%) of those changing place of residence exceeded the affordability benchmark at least once during the three-year period. But the higher STIRs again seemed to be temporary—only 6.6% persistently exceeded the benchmark, well below the average of 8.6%.

Who is more likely to spend 30% or more of household income on shelter costs?

The factors contributing to exceeding the affordability benchmark can be explored using two regression models. The first compares the characteristics of those who *ever* spent 30% or more of their household income on shelter costs with those who never did so. The second compares those who *persistently* spent above the benchmark with those who had at least one year below it.

One in five probability of living in a household spending 30% or more for shelter

The first model predicts that the average[4] Canadian had a probability of about one in five (21%) of ever living in a household spending 30% or more of income on shelter over the 2002 to 2004 period (Table 4). However, the probability (based on the second model) of persistently exceeding the affordability benchmark was much lower (4%).

Table 4 Probability of exceeding the affordability benchmark

	Ever	Persistently	Share of population
		Probability	%
National average	21.3	3.9	100.0
16 to 19 years old	19.7	3.1	6.3
20 to 29 years old	21.7	2.8*	15.0
30 to 49 years old (ref)	20.9	3.9	41.6
50 to 64 years old	21.5	4.6	22.5
65 years old or more	22.6	4.7	14.6
Owners, with mortgage	34.2	10.3	35.7
Owners, without mortgage	5.2*	0.8*	27.4
Owners, change in mortgage status	25.7*	0.8*	8.6
Renters, market (ref)	33.3	11.9	13.4
Renters, subsidized	29.7	5.5*	2.1
Renters, change in subsidy status	38.9	12.1	3.1
Changed tenure	35.4	4.8*	9.7
Ottawa-Gatineau (ref)	18.9	3.2	3.5
Toronto	26.4*	5.4*	15.1
Vancouver	31.6*	7.0*	6.4
Montréal	16.9	3.4	10.9
Calgary	19.9	3.4	2.8
Edmonton	20.7	2.8	3.0
Victoria	28.0*	4.3	0.9
Other CMAs	19.9	3.7	42.8
Rural	18.6	3.4	10.4
Moved between these places	28.0*	3.2	4.2
Couple family (ref)	15.8	3.0	66.1
Men living alone	39.6*	11.0*	4.2
Women living alone	48.2*	16.3*	6.5
Female lone parent	44.9*	13.8*	2.3
Other family type[1]	23.6*	3.5	7.6
Changed family type	34.9*	4.3*	13.3
Disabled	24.1*	4.9*	36.5
Not disabled (ref)	19.8	3.4	63.5
Aboriginal	27.6*	4.8	3.0
Non-aboriginal (ref)	21.1	3.9	97.0
Visible minority	27.1*	4.8	11.7
Not visible minority (ref)	20.6	3.8	88.4
0 to 9 years since immigration (2002)	39.2*	8.3*	4.2
10 to 19 years	26.6*	6.2*	4.1
20 to 29 years	26.8*	4.6	3.0
30 to 39 years	23.9	4.8	3.2
40 years or more	23.0	3.4	3.6
Non-immigrant (ref)	20.0	3.7	81.8
Some high school education	25.0*	4.8*	21.5
High school graduate	23.2*	4.1	14.6
Postsecondary no certificate	22.3*	4.8*	12.0
Postsecondary certificate (ref)	19.5	3.4	26.9
Bachelor's degree	14.7*	2.5*	9.7
Postgraduate degree	12.6*	2.1*	4.9
Education unknown	27.7*	5.5*	10.4

* Significantly different from the coefficient of the reference group (ref) at the 5% level.
1. Includes male lone parents.
Note: Characteristics constant for all three years, unless otherwise indicated.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2002 to 2004.

Individuals and families living through changes affecting their incomes or shelter costs see corresponding changes in their STIRS and, hence, their probabilities of ever or always spending 30% or more of their incomes on housing. Movers, those who change tenure, and those whose family situation changes (perhaps through divorce, marriage or other family changes) are particular examples of those whose circumstances have changed.

Age is not a strong factor in determining the probability of ever spending 30% or more on shelter costs. None of the age groups in the first model had probabilities significantly different from the reference category (age 30-49) of ever having a STIR of 30% or more. For the second model, only the 20-29 age group had a significantly lower probability than those aged 30 to 49 of persistently exceeding the affordability benchmark. However, even though this difference was significant, it was not substantially lower. Perhaps there are a variety of reasons why the 20- to 29-year age group was significantly different from the reference category. This is a group in transition. Some still live at home with their parents and therefore their shelter costs and income reflect their family's situation rather than their own. Those who have moved out may be saving to buy a house and live in inexpensive accommodation to do so. If they have not yet started a family, they will not need the larger, more expensive accommodation required by families. Note that, while many in this age group share accommodation with roommates, these households are excluded from this study.

Subsidized renters less likely than market renters to persistently spend 30% or more for shelter

Renters have the highest median STIRs (Table 5). They are also the most likely to ever spend above the affordability benchmark and, with the exception of subsidized renters, to persistently spend above this benchmark. The first model shows that, for market renters, the probability of ever spending 30% or more on shelter is one in three. The probability drops to one in eight for persistently spending above this benchmark and is even lower for subsidized renters at one in eighteen. This is the case even though the median income for subsidized renters is only half that of market renters. Thus, the second model provides additional evidence that rent subsidies have an effect.

While it may seem counterintuitive that subsidized renters have higher STIRs than market renters, they would be much higher without rent subsidies. If subsidized renters had paid the median market rent of $8,300 rather than their subsidized rents, their median STIR would have been 42% instead of 26%. The median shelter costs of renters subsidized for all three years were 40% below those of market renters. This helps make their shelter costs much more affordable when compared with their very low median incomes.

Owners without mortgages had the lowest STIRs and only a 5% probability of ever spending 30% or more of household income on shelter, far below the 26% of the next lowest tenure group, owners changing mortgage status.

While the 36% of Canadians who are owners with mortgages have about the same probability as market renters of ever exceeding the affordability benchmark, they do so under totally different circumstances. Owners with mortgages had the highest median incomes ($79,300) and also the highest median shelter costs ($15,300). Having the highest incomes, they are better able to afford spending a higher percentage of income on shelter. And these high shelter payments include mortgage principal that builds equity.[5] In contrast, market renters had median incomes only half those of owners with mortgages, but median shelter costs that were more than half.

While the nearly 10% of households that changed tenure during the three years had a relatively high probability of ever spending 30% or more of income on shelter, they were less likely to do so on a persistent basis. It may be that their tenure change is associated

Table 5 Median shelter cost-to-income ratio, shelter cost and income

	STIR	Shelter cost	Household income[1]
Tenure	%	$	$
Owners, mortgage all 3 years	19.6	15,282	79,306
Owners, no mortgage all 3 years	7.8	4,817	62,413
Owners, change in mortgage status	13.1	9,456	76,080
Renters, market, all 3 years (ref)	22.5	8,301	39,572
Renters, subsidized, all 3 years	26.4	5,004	19,547
Renters, change in rent subsidy status	27.0	7,146	27,445
Changed tenure	20.1	9,975	54,984
Geography			
Ottawa-Gatineau	15.7	11,025	79,436
Toronto	19.0	12,976	76,758
Vancouver	21.0	12,047	65,089
Montréal	15.9	8,120	57,405
Calgary	17.5	11,742	74,805
Edmonton	16.1	10,189	72,551
Victoria	16.3	8,260	69,814
Other CMAs	15.8	8,369	60,863
Rural	13.5	5,842	51,286
Moved between places	19.7	9,680	56,468
Family type			
Female lone parent	26.8	8,180	30,504
Women living alone	25.6	5,817	22,870
Men living alone	22.3	6,187	30,813
Changed family type	19.8	9,041	55,176
Couple family	14.9	10,300	74,311
Other family type[2]	14.7	7,312	55,594

1. Not adjusted for family size.
2. Includes male lone parents.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2002 to 2004.

with short-term high STIRs but that, in the longer term (in this study, three years), their situation improves. The change in tenure may be associated with such varied circumstances as a move that temporarily increases shelter costs faster than income or a move to adjust to family breakup and a drop in income.

Toronto and Vancouver residents stand out

"Location, location, location"—so often heard in real estate, can also be used about shelter costs. Housing costs are highest in Canada's largest metropolitan areas. Are these higher costs reflected in higher prob-

abilities of exceeding the housing affordability benchmark? The model suggests that people living in Vancouver and Toronto, two of the largest and the two most expensive cities in Canada, had significantly higher probabilities of ever or persistently exceeding the affordability benchmark compared with those in Ottawa-Gatineau, the reference category.

Torontonians shoulder the highest median shelter cost of all metropolitan areas, but do so on one of the highest median incomes, which mitigates their STIRs. This leaves them with the second highest STIR. At 21%, Vancouverites have the highest median STIR.

Residents of Montreal, Calgary, Edmonton, other CMAs and rural areas have about the same probability of spending above the benchmark as Ottawa-Gatineau residents. Residents of Victoria, accounting for the smallest population share of all the centres in this study, had a relatively high probability (28%) of ever spending 30% or more on shelter. However, in terms of persistently exceeding the affordability benchmark, they were not significantly different from Ottawa-Gatineau.

Finally, as noted, people living in households whose circumstances changed tended to have higher STIRs. Those who moved between metropolitan areas had a significantly higher probability (28%) of ever exceeding the affordability benchmark than those living in Ottawa-Gatineau all three years. But in terms of persistently exceeding the benchmark, movers were not significantly different—perhaps it just takes time to find a good job and affordable shelter in a new city.

Family-related transitions important in housing affordability

Family living arrangements are not static. Various events change family composition—marriage, divorce, separation, death, or the departure or return of grown-up children. Between 2002 and 2004, 13% of the population changed family type. In order to compare families that changed with those that did not change, a separate category was created.[6]

Female lone-parent families had the highest STIRs (27%), followed by women and men living alone. All three of these groups had median incomes less than half that of couple families. Those living alone had median shelter costs that were less than two-thirds those of couples, but female lone-parents paid almost 80% of what couples paid for shelter, which is why their STIRs were the highest.

Couple families, the most common type, account for 66% of all people in Canada. For them, the probability of ever spending more than the affordability benchmark is 16% and the probability of doing so persistently is just 3%, both well below the national average. Couple families benefit from having the highest median income, which offsets their high shelter costs, giving them almost the lowest median STIR.

In contrast, those living in the remaining family types were significantly more likely to ever spend 30% or more on shelter—especially female lone-parents and women living alone. These two family types also had the highest probabilities of persistently spending above the benchmark. Being smaller, these families are not able to benefit from more than one income (whether from government transfers or a salary). Perhaps even more importantly, employed women's average earnings are still substantially lower than men's, even for those employed on a full-time basis. In 2003, women working full time, full year earned $36,500, about 71% of their male counterparts (Statistics Canada 2005).

Those whose family type changed deserve special mention. Like those who moved or changed tenure, their probability of ever exceeding the benchmark was elevated—much higher than for couples, though not as high as for women living alone or female lone-parents. Their probability of always exceeding the benchmark was also significantly higher than for couples, though not by much. Families who add or lose members may be able to make adjustments that reduce their STIRs after a year or two, whereas women living alone or bringing up children by themselves do not have such flexibility.

Recent immigrants and visible minorities have high probabilities of ever spending more than the housing affordability benchmark

More than 70% of immigrants arriving since 1982 belong to a visible minority group. For this reason, the findings for recent immigrants and visible minorities are discussed together.[7]

The high proportion of recent immigrants who are also visible minorities is not the only pertinent similarity between these two groups. Both also tend to live in the largest urban centres, where shelter costs are highest. For example, in 2001, 86% of immigrant households versus 58% of non-immigrant households lived in census metropolitan areas and both groups are

more likely than Canadians in general to live in Toronto and Vancouver. In 2001 the proportion of visible minorities living in these two cities was four times larger than for those who were not part of a visible minority. Almost 40% of all visible minorities, compared with 11% of those who were not visible minorities, lived in Toronto. For Vancouver, the figures were 18% and 5% (CMHC forthcoming).

Another similarity between visible minorities and recent immigrants is family size. Visible minority families in 2002 averaged 3.8 people compared with 2.9 for families that were not visible minorities. Similarly, recent immigrant families averaged 3.7 for those in Canada less than 10 years and 3.9 for those here for 10 to 19 years. For the Canadian-born, the average family size was 3.0. Larger families tend to require larger accommodations, pushing up shelter costs. However, larger families can also generate more income through the efforts of additional earners or from transfer payments. In fact, while median household incomes are similar for those who are visible minorities and those who are not, and for immigrants (except the very recent ones) and the Canadian-born, shelter costs are much higher for visible minorities and recent immigrants (Table 6).

Given their tendency to live in the largest, most expensive cities and their larger families, it is not surprising that both recent immigrants and visible minorities had significantly higher probabilities of spending 30% or more of income on shelter at least once during the three years. For immigrants (including those who are and those who are not visible minorities), this higher probability declines with the length of time they have lived in Canada—those in Canada 40 years or more had probabilities not significantly different from the Canadian-born. Immigrants in Canada for less than 10 years had the highest probability of ever exceeding the affordability benchmark (39%). This dropped to 23% for those in Canada for 40 or more years.

Results are similar for immigrants persistently exceeding the affordability benchmark. Recent immigrants were significantly more likely than the Canadian-born to exceed the benchmark and this probability dropped as the years in Canada increased, until no significant difference from the Canadian-born was seen. For visible minorities, however, no significant difference from those who were not visible minorities was seen in the probability of persistently exceeding the affordability benchmark.

Table 6 Median shelter cost-to-income ratio, shelter cost and income by selected characteristics, 2002

	STIR	Shelter cost	Household income[1]
Visible minority status	%	$	$
Yes	21.1	12,111	61,949
No	15.9	8,728	62,898
Years since immigration			
0 to 9	25.6	12,756	49,300
10 to 19	20.8	12,800	64,522
20 to 29	17.7	11,537	73,813
30 to 39	14.4	7,975	73,143
40 and more	14.1	6,316	49,245
Canadian born	16.0	8,852	63,435
Aboriginal status			
Yes	19.0	8,286	50,365
No	16.4	9,088	63,206
Disability status			
Yes	17.1	7,425	51,274
No	16.2	10,116	69,999
Education			
Some high school	16.9	6,801	45,691
High school diploma	16.6	8,807	59,200
Postsecondary without certificate	17.2	9,706	65,597
Postsecondary with certificate	16.3	9,455	65,431
Bachelor's degree	14.7	11,231	85,584
Postgraduate degree	13.5	12,115	97,039
Unknown	18.3	10,053	61,497

1. Not adjusted for family size.
Source: Statistics Canada, Survey of Labour and Income Dynamics.

Aboriginal households more likely to spend more than benchmark, but not persistently

Unlike immigrants, Aboriginals living off reserve do not congregate in Toronto and Vancouver.[8] Only 11% of Aboriginal Canadians lived in these two CMAs compared with 22% of non-Aboriginals. This difference likely accounts for their lower median shelter costs, $8,300 versus $9,100. But their lower shelter costs are associated with even lower incomes, resulting in STIRs that are higher than for non-Aboriginals.

Aboriginals living off reserve were significantly more likely than non-Aboriginals to ever exceed the affordability benchmark, but no more likely to do so persistently. Aboriginals had a higher rate of moving over the three-year period—17% versus 12% for non-

Aboriginals—and, as already seen, households that moved were more likely to exceed the affordability benchmark.

As noted, Canadians moving between metropolitan areas had a significantly higher probability of ever exceeding the affordability benchmark, but not of persistently exceeding it. Perhaps it is the higher mobility of Aboriginal Canadians that causes them to have a similar pattern to movers, as it may take time to find a good job and affordable shelter in a new city.

On the other hand, other characteristics of Aboriginal housing include higher rates of crowding or unsuitable housing (as measured by the National Occupancy Standard) and higher rates of living in a unit in need of major repairs (Chart B).[9] Aboriginals may be living in inadequate or unsuitable accommodation to lower their rents.

Disabled more likely to exceed affordability benchmark

Those who self-identified as disabled at least once during the three years had significantly higher probabilities than the non-disabled of ever or persistently exceeding the affordability benchmark. The disabled were also more likely to live in families where the major source of income came from government transfers (including old age security) rather than wages and salaries (Chart C).

Higher education: higher earning power and lower STIRs

As would be expected, compared with those who received some kind of postsecondary certification other than a bachelor's degree, those with less education have significantly higher probabilities of ever or persistently exceeding the affordability benchmark. Similarly, those with more education (bachelor's or postgraduate degrees) have significantly lower probabilities of doing so (Table 4).

Conclusion

The traditional cross-sectional analysis of housing affordability using shelter cost-to-income ratios (STIRs) has been extended by adding longitudinal data. While a stable 20% of Canadians live in households spending above the affordability benchmark for shelter in any single year, when measured over a three-year period, 28% reported living in a household ever exceeding the benchmark—12% for one year, 7% for two years and 9% for all three years. Hence, roughly

Chart B   Aboriginal Canadians more likely to live in housing that is crowded or in need of major repairs
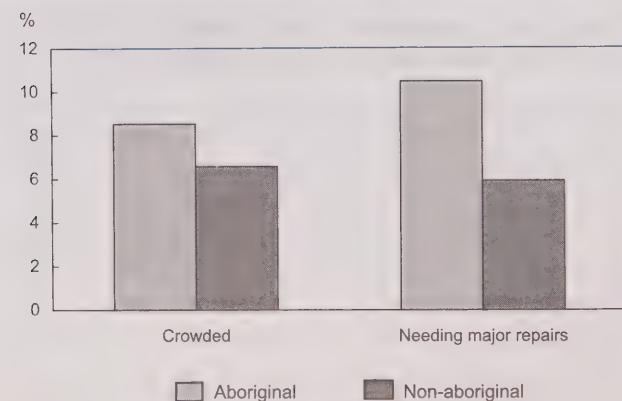
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2002 to 2004.

Chart C   The disabled more likely to live in households where major source of income is government transfers
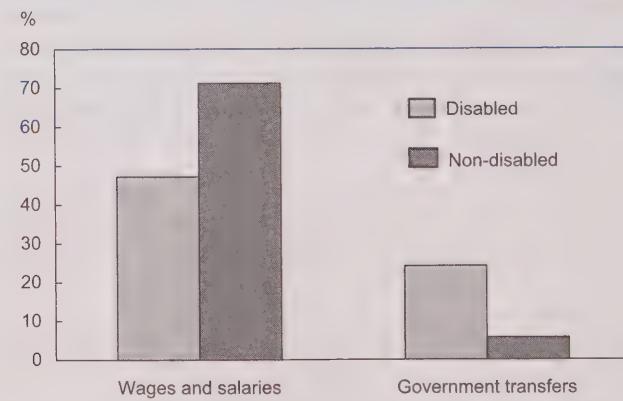
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2002 to 2004.

one-third of those exceeding the benchmark at least once during the study period can be considered to be persistently doing so, while the other two-thirds are moving in and out of this state. However, three years is rather a short period. Some of the seemingly transient group may be ending or starting a prolonged period of exceeding the benchmark.

To identify the factors associated with spending above the affordability benchmark, two logistic regression models examined the correlates of living in a household either persistently (all three years) or ever (at least one year), having a STIR of 30% or more. Both models corroborated the cross-sectional and longitudinal analyses. The attributes associated with the highest probabilities of living in a household spending above the affordability benchmark were: living alone, being a female lone parent, renting, being an immigrant, or living in Vancouver or Toronto.

In addition, those living in households experiencing some kind of transition between 2002 and 2004 had a higher probability of exceeding the benchmark at least once during the period. Such transitions included renters with a change in rent-subsidy status, those who changed from owner to renter or vice versa, those who changed family type (for example, marrying or divorcing), and those who moved between cities. Notably, those experiencing these transitions did not exceed the benchmark persistently.

And renters in subsidized housing for all three years of the study period, while experiencing probabilities similar to market renters for exceeding the benchmark in at least one year, had lower probabilities of persistently doing so—this despite having median incomes approximately half that of market renters.

Perspectives

■ Notes

1. Core housing need refers to those whose housing is overcrowded, in need of major repairs, or costs 30% or more of household income and who could not afford to rent adequate, suitable and affordable housing in their local housing market for less than 30% of total before-tax household income.

2. Utility costs are imputed onto the SLID database for both renters and owners based on census data.

3. Median STIRs in this report include households with STIRs equal to or greater than 100%. Overall, roughly 3% of households have such STIRs. However, since a given income group (or other sub-population) may have a

higher or lower percentage, the effects of this inclusion may vary. Normally, CMHC excludes these households from its affordability studies since it is difficult to interpret their financial circumstances. Possible reasons for STIRs greater than 100% include: different reference periods for shelter and income; the collection of shelter costs that seem too high (perhaps because, if a business is operated from home, it is difficult to separate shelter costs from business expenses); fluctuations in self-employment income; and the household having revenue other than standard income to put toward shelter.

4. Setting all model variables to their mean values mimics an 'average' Canadian in the sample.

5. The principal portion of a mortgage payment helps build equity and therefore household wealth. Thus, owners with mortgages who spend 30% or more of their income on shelter (i.e. they do not meet the affordability benchmark) are, unlike renters, contributing to their wealth. However, the breakdown of mortgage payments into principal and interest is often not known by respondents and is not asked in SLID.

6. 'Family type' categories used in this report are: couple families, female lone-parents, women living alone, men living alone, other family type and changed family type. Categories are assigned to individuals based on all members of the family, even though children under 16 years of age are not included in the models. Also, households with more than one economic family are not part of this study. Couple families include those with and without children (under 18). This category includes married, common-law and same-sex relationships. Female lone-parent families include at least one child and the mother must be younger than 65. The category 'other family type' includes male lone-parent families and couples or lone-parent families with other relatives living with them. Those who changed family type during the three-year period could have married, separated or divorced, had a death in the family, had children turn 18, or had relatives (including children 18 or over) leave home or take up residence with them.

7. Immigrants are those born outside Canada and who have been given the right to live in Canada permanently by immigration authorities. Visible minority status is defined based on three questions: mother tongue, ethnic or cultural group of ancestry, and country of birth. Recent immigrants are defined based on the 'years since immigration' variable. For this report, those who immigrated in the 20 years before 2002 are recent immigrants. Those who immigrated in the 9 years before 2002 are the most recent immigrants.

8. Those in the Aboriginal category indicated at least one of the following: that they were a Treaty Indian or a Registered Indian as defined by the Indian Act of

Canada; or that their ancestors were Cree, Micmac, Métis or Inuit. This method of defining Aboriginal is different from the census definition. In the census, an identity approach is taken and those in the Aboriginal category answered yes to at least one of the following: that they were an Aboriginal person; that they were a member of an Indian Band or First Nation; or that they were a Treaty Indian or a Registered Indian as defined by the Indian Act of Canada. The SLID definition gives a higher estimate for off-reserve Aboriginals: 629,000 (aged 16 and over) in reference year 2001 compared with 471,000 (aged 15 and over) on the 2001 Census. SLID's estimate includes those with Aboriginal ancestry.

9. Overcrowded dwellings do not have enough bedrooms for the size and make-up of resident households, according to National Occupancy Standard (NOS) requirements. Enough bedrooms based on NOS requirements means one bedroom for each cohabiting adult couple; unattached household members 18 years of age and over; same-sex pairs of children under age 18; and additional boys or girls in the family, unless there are two opposite sex siblings under 5 years of age, in which case they are expected to share a bedroom. A household of one individual can occupy a bachelor unit (i.e. a unit with no bedroom) (CMHC 1991).

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RRSP investments

Wendy Pyper

Retirement income comes from a mix of sources, commonly referred to as the 'three pillars' (Department of Finance Canada 2003). Government sources—Old Age Security and the Guaranteed Income Supplement—make up the first pillar. These programs provide most people 65 and over with basic income support. The second pillar consists of the Canada Pension Plan and the Quebec Pension Plan, which provide basic earnings-related pensions for all workers. The final pillar includes tax-assisted employer-sponsored pension plans (EPPs) and registered retirement savings plans (RRSPs). The total value of assets held in EPPs amounted to $1.0 trillion in 2005 (Statistics Canada 2006) and almost $600 billion was held in registered plans that year.[1] Together, assets in EPPs and registered plans made up almost one-third of total family assets in 2005. Over the period from 1986 to 2003, average contributions to EPPs and RRSPs increased—for example, contributions by young couples increased from $2,000 in 1986 to $3,100 in 2003 and for prime-aged couples they increased from $3,900 in 1986 to $5,300 in 2003.[2]

RRSPs and some types of EPPs are the only components for which plan holders have any control over the investment portfolio. Investors can hold a wide variety of assets within their RRSPs, ranging from investments with predictable values such as guaranteed investment certificates to those whose values vary, like stocks of individual companies. Given the wide fluctuations seen in the stock market and the relatively modest changes in interest rates, returns to these investments, and therefore income levels in retirement, can vary dramatically, depending on the mix of investments. For the first time, the 2005 Survey of Financial Security (SFS) collected details on the types of investments held in registered plans. This article examines the characteristics of families who hold RRSPs and the allocation of assets within the RRSP according to the level of predictability of their return on investment (see *Data source and definitions*).

Majority of families hold RRSPs

In 2005, 6 in 10 families held RRSPs, with a median value of $25,000 (Table 1). As expected, age was associated with both the prevalence and the amount. Among younger families (major income recipient [MIR] aged 25 to 44), 56% held RRSPs, compared with 68% for those somewhat older (MIR 45 to 54). For those older than the traditional retirement age (MIR 65 to 69), the prevalence dropped to 47%. This is not surprising—for many of these older families, retirement may have already occurred and some may have converted RRSPs to RRIFs.

The SFS measures the stock of RRSP assets accumulated over time as opposed to purchases of RRSPs in a specific year. Since younger families (MIR 25 to 44) have had less time to accumulate funds, they reported only $15,000 in their RRSPs (median value).[3] Those aged 45 to 54 and 55 to 64 have potentially had more years of employment to accumulate funds and, as a result, had saved substantially more ($40,000 and $55,000 respectively). After age 65, some families may have begun to draw funds out of their RRSPs as income has traditionally declined after retirement. In addition, some members of these families may have reached the mandatory age to convert RRSPs to RRIFs.[4] As a result, the median value held by these families was lower ($37,000).

Looking at retirement savings on a broader level, almost three-quarters of families had either RRSPs or EPPs (or both), with a median value of $65,800. At each age level, median EPP holdings were substantially higher than RRSPs. For those families approaching retirement age (MIR 55 to 64), 8 in 10 held either RRSPs or EPPs, with a substantially higher median value ($244,800).

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Table 1 Families with financial assets

	With RRSP		With EPP		With RRSP and/or EPP	
	%	$ (median)[1]	%	$ (median)[1]	%	$ (median)[1]
All families	**60**	**25,000**	**50***	**65,400** *	**74***	**65,800** *
Age of major income recipient (MIR)						
25 to 44	56(*)	15,000 (*)	44*(*)	18,900 (*)	69*(*)	29,800 *(*)
45 to 54 (ref)	68	40,000	54*	116,500 *	79*	137,800 *
55 to 64	65	55,000	58	227,100 *(*)	81*	244,800 *(*)
65 to 69	47(*)	37,000	58	213,400 *(*)	71*	215,600E*
Sex of MIR						
Male (ref)	63	30,000	53*	70,000 *	77*	84,900 *
Female	55(*)	20,000 (*)	45*(*)	54,100 *	68*(*)	50,000 *(*)
After-tax family income						
Less than $36,500	35(*)	10,000 E(*)	25*(*)	28,800E *(*)	48*(*)	16,300E (*)
$36,500 to $58,999	65(*)	20,000 (*)	59*(*)	52,900 *	83*(*)	54,500 *(*)
$59,000 to $84,999 (ref)	81	28,500	70*	64,000 *	94*	75,800 *
$85,000 and over	89(*)	80,000 (*)	77*(*)	162,400 *(*)	97*(*)	224,100 *(*)
Education of MIR						
Less than high school	33(*)	17,000 E(*)	31 (*)	96,800E *	50*(*)	F
Graduated high school	58(*)	20,000 (*)	47*(*)	61,500 *	73*(*)	50,000 *(*)
Non-university						
postsecondary certificate	64(*)	25,000	55*	56,800 *	78*	65,000 *
University degree (ref)	73	30,000	59*	79,600E *	82*	102,800E*
Net worth quintile						
Bottom	19(*)	F	23 (*)	12,100E *(*)	35*(*)	4,000E (*)
Second	46(*)	6,000E(*)	39*(*)	18,400E *(*)	61*(*)	12,600 *(*)
Middle (ref)	64	15,000	58*	54,900 *	83*	33,000 *
Fourth	81(*)	35,000 (*)	70*(*)	95,500 *(*)	92*(*)	100,000 *(*)
Top	87(*)	111,100 (*)	59*	190,000 *(*)	92*(*)	250,000 *(*)

* significantly different from 'with RRSP' at the .05 level
(*) significantly different from the reference group (ref)
1. For those with holdings.
Source: Statistics Canada, Survey of Financial Security, 2005.

Families whose major income recipient was a man were more likely to hold RRSPs (63% versus 55% for families whose MIR was a woman). In addition, these families held more in their RRSPs ($30,000 compared with $20,000). The same pattern held for employer-sponsored pension plans as well as for the combination of EPPs and RRSPs.

The well-off are well invested

Family income is related to both the propensity to save and the amount saved. Since families purchase RRSPs (and other investments) out of disposable income, those with higher incomes are more likely to be financially able to invest in RRSPs. Indeed, nearly 90% of families with after-tax annual incomes of $85,000 or more owned RRSPs, with a median value of $80,000. This differs sharply from families with lower incomes (less than $36,500) where only 35% of families held RRSPs, with a median value of just $10,000.

Since income and education are related, it is not surprising that families whose major income recipient had a high level of education were more likely to have an RRSP, with a higher median value. Just a third of families whose MIR had less than a high school education held RRSPs (median value of $17,000), compared with almost three-quarters of families with a university degree ($30,000).

RRSPs are but one component of the total net worth of families. Subtracting total family debts like mortgages and consumer credit from assets such as homes,

Data source and definitions

The **Survey of Financial Security** (SFS), which covered about 5,300 families, collected information between May and July 2005 on the assets and debts of families and individuals. Residents of the territories, households on Indian reserves, full-time members of the Armed Forces, and residents of institutions were excluded. Information was collected on the value of all major financial and non-financial assets as well as money owed. This study examined families whose **major income recipient** (the person with the highest income before tax) was between 25 and 69 years of age. **Families** refers to family units of all types including unattached individuals, couples with or without children and lone parents.

All differences mentioned in the text have been tested for statistical significance using boot-strapped coefficients of variance.

Registered retirement savings plans (RRSPs) are defined under the *Income Tax Act*. Contribution limits are based on earned income and amounts contributed to employer-sponsored pension plans. Contributions and accumulated investment income are tax-deferred until withdrawal.

Employer-sponsored pension plans (EPPs) are registered with Canada Revenue Agency and also with the appropriate pension regulatory authority.

Registered retirement income funds (RRIFs) are an income stream (generally during retirement) established by transferring monies directly from an RRSP or EPP. All RRSPs must be converted to RRIFs by the end of the year in which the participant turns 69 (amended to 71 in the 2007 budget). A minimum amount (which is taxable) must be withdrawn each year, beginning the year after the RRIF is established.

A **locked-in retirement account** (LIRA) is an RRSP in which the money is locked in until the person reaches a specified age. This money would have been transferred from an employer-sponsor registered pension plan after the individual terminated employment.

Net worth is the difference between the value of total asset holdings and total indebtedness.

Acronyms used

CSB Canada Savings Bond
GIC guaranteed investment certificate
IT income trust
MF mutual fund
TB treasury bill

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vehicles, EPPs, RRSPs and other financial holdings determines net worth. In the bottom fifth of net worth, less than 20% of families had RRSPs. In the top 20%, however, the proportion reached 87%. Among those holding RRSPs in the top net-worth group, the median value was $111,100, significantly higher than for other groups.[5] Similarly, since EPPs are a major component of net worth, it is not surprising that those with the top net worth have by far the largest median holdings of EPPs ($190,000).[6]

Mutual funds most popular

RRSPs can be composed of a wide variety of investments ranging from guaranteed investment certificates (GICs) to stocks.[7] Mutual funds were the most common investment for RRSPs. For example, 4 in 10 families held mutual funds in their RRSPs (Chart). This may be due to the broad diversity of funds available, ranging from very predictable to highly variable. Investors may also be lowering their risk through diversification. The second most popular investment vehicle was GICs, with 20% of families holding them. These secure interest-earning assets provide investors

Chart   Mutual funds most common investment, have highest median value
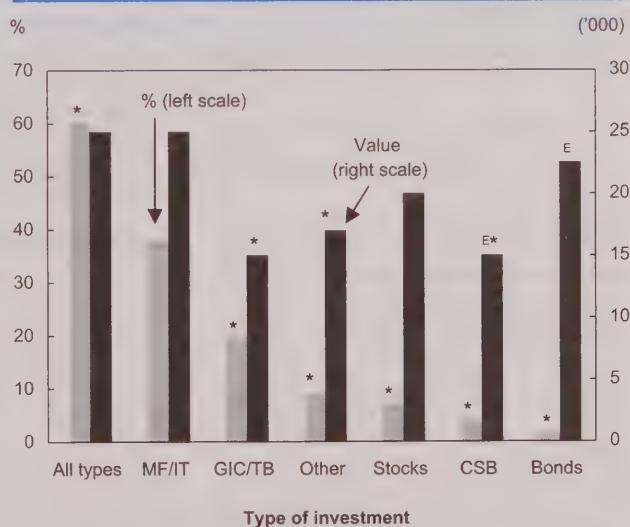
* significantly different from the reference group (MF/IT)
Source: Statistics Canada, Survey of Financial Security, 2005.

with a set return for a specific period, so they know ahead of time what their money will earn over the period. Like GICs, Canada Savings Bonds offer security and 4% of RRSP holders held these in their portfolios.

Generally considered less stable because they are more prone to variability and their value is less predictable, stocks can also be held by RRSP investors.[8] Of those who held RRSPs, only 7% owned stocks. However, of those who owned stocks, the median value approached that of mutual funds ($20,000 and $25,000 respectively). This could indicate that these investors may be better versed in financial matters, or perhaps smaller RRSPs do not justify the narrow focus of investing in individual stocks.

Age related to investment choices

Since RRSPs are designed to be used in retirement, and since the various investment vehicles have different levels of stability and predictability, some variation would be expected by age in the types of RRSP investments (Table 2). Indeed, older families (MIR 55 to 64) held the most stable and predictable investment types (26% held GICs and 6% CSBs) compared with younger families whose retirement investment horizon is significantly longer (15% and 3% respectively).

Also as expected, the median amounts for each investment type were higher as families approached the traditional retirement age. For GICs held by families approaching retirement (MIR 55 to 64), the median was $25,000, significantly higher than for families headed by someone 25 to 44 years of age ($9,000). Similarly, the median amount held in mutual funds by these older families was $52,000, significantly higher than for younger families ($16,000 for those 25 to 44).

Asset allocation tipped toward less predictable vehicles

While looking at RRSP holdings gives some information, it does not shed light on the asset mix held by families. To do this, the asset allocation of families was examined. Based on the stability of their value, investments were categorized as either 'predictable' (GICs, CSBs and treasury bills) or 'variable' (mutual funds, income trusts, stocks and bonds).[9] Then the asset allocation for each family was determined, and families were categorized based on the proportion of their assets held in each category.

The majority of families (59%) with RRSPs held their entire RRSP portfolios in investments with variable values while only one-quarter held exclusively assets with predictable values (Table 3).

Table 2 RRSP holdings by age of major income recipient

	For those with RRSP holdings, families holding specific type				Amount held[1]			
	25-44	45-54	55-64	65-69	25-44	45-54	55-64	65-69
	%				$ (median)			
Total	56 *	68	65	47 *	15,000 *	40,000	55,000	37,000 *
Mutual funds/income trusts	35	46 *	40	22ᴱ*	16,000 *	39,000	52,000	38,000ᴱ
Guaranteed investment certificates/treasury bills	15 *	24	26	19ᴱ	9,000 *	20,000ᴱ	25,000ᴱ	F
Other	9	9	11	7ᴱ	10,000ᴱ*	25,000ᴱ	34,000ᴱ	F
Stocks	6 *	9	9	6ᴱ	10,000ᴱ	25,000ᴱ	F	F
Canada Savings Bonds	3ᴱ*	4ᴱ	6ᴱ	F	9,000ᴱ	F	F	F
Bonds	1ᴱ	F	F	F	F	F	F	F

* significantly different from the reference group (55-64)
1. Those holding the specific type of RRSP.
Source: Statistics Canada, Survey of Financial Security, 2005.

Table 3 Families by asset allocation category

	Predictable[1]	Mixed	Variable[2]
		%	
Total	**25**	**17** *	**59***
Age of major income recipient (MIR)			
25 to 44	24	11 *(*)	65*(*)
45 to 54	23	20	57*
55 to 64 (ref)	26	26	48*
65 to 69	39E	13E*(*)	47
Sex of MIR			
Men (ref)	23	18 *	59*
Women	28	14 *	59*
Education of MIR			
Less than high school	40 (*)	10E*(*)	51
Graduated high school	27 (*)	10E*(*)	63*
Non-university postsecondary certificate	28 (*)	19 *	53*(*)
University degree (ref)	17	20	62*
After-tax family income			
Less than $36,500	35 (*)	9E*(*)	56*
$36,500 to $58,999	32 (*)	13 *	55*
$59,000 to $84,999 (ref)	20	19	62*
$85,000 and over	13E	25 *	61*
Net worth quintile			
Bottom	35E	F	59*
Second	35	8E*	58*
Middle (ref)	33	10E*	58*
Fourth	20 (*)	20 (*)	60*
Top	17 (*)	25 *(*)	58*
Any type of EPP			
No members (ref)	27	14 *	58*
One member	25	18 *	57*
Two or more members	20 (*)	18	62*

* significantly different from 'predictable' at the 0.05 level
(*) significantly different from the reference group (ref)
1. GIC, CSB and treasury bills.
2. MF, IT, stocks, bonds.
Source: Statistics Canada, Survey of Financial Security, 2005.

Two-thirds of younger families held all of their RRSPs in investments with variable values, substantially more than older families (close to half for families with an MIR 55 or older). This follows a life-cycle model of investment, where the risk associated with higher but variable returns gradu-ally gives way to the need to have more stable or predictable income in retirement.

Holding exclusively investments with predictable values was more common among families whose MIR had less education. About 40% of families whose MIR had less than a high school education held all of their RRSPs in predict-able vehicles compared with just 17% for those with a university degree.

Also, families with lower after-tax incomes were more likely to hold only investments with predictable values (35% for families with lower incomes compared with 13% for families with after-tax incomes of $85,000 or more). Similarly, families in the bottom net-worth quintile invested exclusively in pre-dictable investments more often than families in the top quintile. Several factors may be influencing these decisions. Families with lower incomes or net worth may not feel that they can afford to lose money should their investments not be profitable. Perhaps families are not planning these investments for use in the long-term—indeed they may need to access this money earlier, should the need arise (Giles and Maser 2004).[10] Interestingly, pro-portions of those holding only risky investments varied very slightly (if at all), depending on income or net worth—instead, differences across income and net worth categories were mixed, with families having a combination of investments.

Relation to other types of retirement savings

Employer-sponsored pension plans (EPPs) provide employees with regular incomes at retirement, but not all workers are part of such plans. These plans are additional savings, which will become avail-able at retirement. As such, they may influence whether and where a family saves additional funds in an RRSP. Families without an EPP were more likely to invest their RRSPs entirely in predictable retire-ment investment vehicles (27% with no EPP members in the fam-

ily versus 20% with two or more members). Part of this difference is likely attributable to the relationship between EPP plan availability and income—lower-paying jobs are less likely to provide EPPs (Marshall 2003).

Summary

Canada's retirement income system is based on three pillars: the Old Age Security program providing basic income support, the Canada Pension Plan and Quebec Pension Plan offering earnings-related pensions, and tax-assisted plans allowing for private savings for retirement. Private savings for retirement constituted almost one-third of total family assets in 2005.

In 2005, 6 in 10 families held RRSPs, with a median value of $25,000. A smaller proportion of younger families (MIR aged 25 to 44) than those in the years before retirement (MIR 45 to 54) held RRSPs (56% and 68% respectively).

Nearly 90% of families with higher levels of after-tax income ($85,000 or more) held RRSPs, substantially more than families with lower levels of income (35% for families with an income under $36,500). For those owning RRSPs, the median amount held varied similarly by income.

Investors can hold a variety of investments in their RRSPs. The most common holding was mutual funds (38%), likely due to the broad range of products available. Guaranteed investment certificates, with their predictability, were the second most popular, with 20% of families holding them. At the other end of the RRSP investment spectrum, only 7% of families held stocks.

Perhaps more important than the type of investment is the asset mix held by families. The majority (59%) of families held their entire RRSP portfolios in variable-value assets (mutual funds, stocks or bonds). Only one-quarter held assets with predictable values (guaranteed investment certificates, Canada Savings Bonds or treasury bills) exclusively. Two-thirds of younger families held assets with variable values exclusively, substantially higher than rates for families of the age traditionally thought of as retirement age (less than 50% for families with MIR 55 to 69). Families with lower levels of income were more likely to hold only assets with predictable values.

Perspectives

■ Notes

1. RRSPs, LIRAs, RRIFs or deferred profit-sharing plans, annuities and other miscellaneous pension assets.

2. See Morissette and Ostrovsky 2006 for a complete discussion of retirement savings of Canadians, 1986 to 2003.

3. When comparing differences between age groups, some of the difference may be an age effect and some may be a cohort effect.

4. At the time of the SFS, the mandatory age for conversion was 69. Under proposed legislation, this limit was changed to 71 in 2007 (Canada Revenue Agency 2007).

5. Obviously, some of this is due to RRSP holdings being part of the value of net worth.

6. Based on median values for those holding EPPs, they are the top financial asset held and only real estate holdings exceed their value (Statistics Canada 2006).

7. See Canada Revenue Agency 2002 for details on which investments qualify.

8. While stocks are often held indirectly by investors as part of mutual funds, in this study 'stocks' refers specifically to those purchased directly by the investor.

9. While variable investments run from 'risky' to 'relatively risk-free,' their values are neither predictable nor guaranteed, unlike GICs, CSBs and TBs.

10. Approximately one-quarter of tax filers aged 20 to 59 as of the end of 1992 made at least one withdrawal from an RRSP between 1993 and 2001. Life events were one explanation—loss of a spouse, involuntary job loss and starting a new business were all associated with withdrawals of substantial sums ($10,000 or more).

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Earnings in the last decade

René Morissette

The last decade has seen many changes that may have affected earnings of Canadian workers. The proliferation of information and communication technologies and the fast-growing supply of relatively skilled workers in low-wage countries have allowed Canadian firms to contract out highly skilled jobs in services such as engineering and informatics, increasing international trade in relatively sophisticated commercial services. Likewise, trade in goods produced by non-OECD countries has been growing sharply. As a result, Canadian workers have faced growing international competition, not only from relatively skilled workers in service industries but also from less skilled ones in goods-producing industries. This expansion of international trade with non-OECD countries has opened new markets for Canadian firms, potentially stimulating employment and earnings growth in some sectors of the economy.

Along with these changes in trade patterns and technology use, demographic trends also influenced labour market conditions and earnings, as retirements increased even as the participation rate of older workers started rising in the late 1990s. More recently, the appreciation of the Canadian dollar and the job losses in manufacturing may have tended to pull earnings down in this industry. In contrast, Alberta's economic boom and the downward trend in unemployment in several other provinces may have created upward pressures.

Recent years have also witnessed sharp growth at the top of the Canadian earnings distribution (Saez and Veall 2005), a phenomenon also observed in the United States. While the factors underlying this trend are still largely unknown (Lemieux 2007), it has been argued that the strong earnings increases for highly paid

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Data source and definitions

The Labour Force Survey (LFS), since 1997, has collected information on the usual wage or salary of employees at their main jobs. Respondents are asked to report their earnings, including tips and commissions, before taxes and other deductions. Average weekly and hourly earnings are calculated based on usual paid hours per week. Average earnings based on distributions can then be cross-tabulated by earnings and characteristics such as age, sex, education, occupation, and union status.

The LFS sample is representative of the civilian, non-institutionalized population 15 years of age or older. Excluded from the survey's coverage are persons living on reserves and other Aboriginal settlements in the provinces, full-time members of the Canadian Armed Forces and the institutionalized population. These groups together represent approximately 2% of the population aged 15 and over.

Unless otherwise specified, the sample used consists of individuals aged 15 to 64 who are employees in their main jobs (i.e. the one involving the most usual hours per week) and who live in one of the ten provinces. Full-time students are excluded. An alternative sample consisting only of private-sector employees aged 15 to 64 is also used in some instances. Unless otherwise noted, January to November averages are used.

The public sector covers employees in public administration at all levels, Crown corporations, liquor control boards and other government institutions such as schools (including universities), hospitals and public libraries. The private sector comprises all other employees and self-employed owners of businesses (including unpaid family workers in those businesses), and self-employed persons without businesses.

Hourly earnings are in 2002 dollars using province-specific consumer price indexes (all items).

workers might have been implemented to dissuade highly talented executives and professionals from moving to the United States.

The article uses the Labour Force Survey to examine the evolution of earnings in Canada from 1997 to 2007 (see *Data source and definitions*). Did earnings grow at the same pace in all provinces? Did they fall in manu-

facturing and rise among highly skilled workers? Did the percentage of low-paid jobs fall? Did highly paid jobs become more prevalent?

Overall trends

Average hourly earnings rose 6% in real terms over the last decade, from $17.68 (2002 $) in 1997 to $18.80 in 2007 (Table 1). In the private sector, they grew by roughly 7%. They trended upwards between 1997 and 2001, remained virtually constant between 2001 and 2004 and then rose again (Chart A).

Growth rates in the private sector differed markedly by province. While Alberta enjoyed by far the strongest growth (15%), Newfoundland and Labrador, Nova Scotia and Saskatchewan had rates hovering around 11%. In contrast, average earnings grew only 3% in British Columbia. In many provinces, much of the growth occurred between 2004 and 2007. Similar patterns are observed when all industries are considered.

While average earnings of private-sector employees increased by about 7% nationwide, their median earnings rose roughly 5%. The median changed very little in Ontario and British Columbia, but increased by 10% or more in Nova Scotia, Saskatchewan and Alberta.

The strong increases observed in Alberta over the last decade had a clear impact on the province's earnings distribution. The proportion of jobs paying less than

Chart A Average earnings in Alberta's private sector grew sharply after 2004

Index (1997=100)
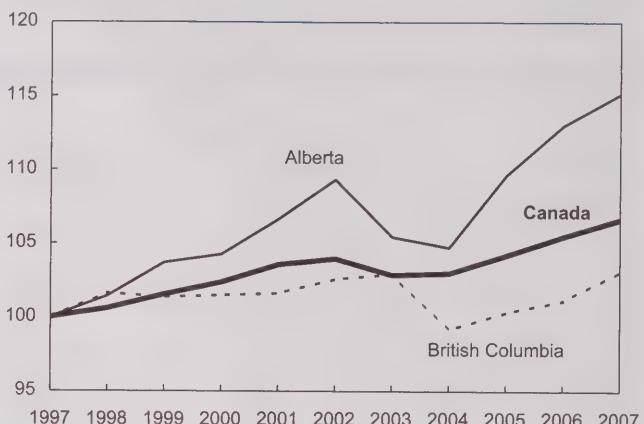
Source: Statistics Canada, Labour Force Survey, March and September.

$10 per hour (in 2002 $) fell by fully 10 percentage points, dropping to 12% in 2007 (Table 2). Conversely, high-paying jobs became more prevalent, as the proportion of jobs paying at least $25 per hour rose by 7 points.

This upward shift in the wage distribution was evident in most provinces—Newfoundland and Labrador, Ontario and British Columbia being the exceptions. While these provinces increased their share of jobs paying at least $25 on an hourly basis, they did not markedly reduce the incidence of low-paid employment (proxied by the proportion of jobs paying less than $10 per hour). For instance, close to one-third of jobs in Newfoundland and Labrador paid less than $10 per hour in both 1997 and 2007, even though the relative importance of high-paying jobs increased by 7 percentage points.[1] In Ontario, 17% of jobs paid less than $10 per hour in 2007, compared with 16% in 1997.

Table 1 Average hourly earnings by province

	All industries			Private sector		
	1997	2007	Change	1997	2007	Change
	2002 $		%	2002 $		%
Canada	17.68	18.80	6.3	16.34	17.43	6.7
Newfoundland and Labrador	14.51	16.00	10.3	12.53	14.02	11.9
Prince Edward Island	13.30	14.45	8.7	11.15	12.21	9.4
Nova Scotia	14.53	15.98	10.0	12.97	14.36	10.8
New Brunswick	14.51	15.43	6.4	12.96	13.74	6.0
Quebec	17.23	18.00	4.5	15.63	16.48	5.5
Ontario	18.71	19.77	5.6	17.40	18.34	5.4
Manitoba	15.69	17.00	8.3	14.09	15.28	8.4
Saskatchewan	15.63	17.30	10.7	13.98	15.53	11.1
Alberta	17.23	19.54	13.4	16.34	18.71	14.5
British Columbia	18.58	19.11	2.9	17.19	17.74	3.2

Source: Statistics Canada, Labour Force Survey, January to November.

Table 2 Hourly earnings distribution by province (2002 $)

| | Jobs paying | | | | |
	Less than $10.00	$10.00 to $14.99	$15.00 to $19.99	$20.00 to $24.99	$25.00 or more
Canada			%		
1997	20.1	24.7	21.8	15.6	17.9
2007	18.0	23.8	22.2	13.7	22.2
Newfoundland and Labrador					
1997	32.7	28.1	16.8	12.7	9.6
2007	32.3	22.8	17.3	10.6	16.9
Prince Edward Island					
1997	38.5	30.4	16.7	9.1	5.3
2007	33.6	29.7	18.1	8.8	9.9
Nova Scotia					
1997	31.0	29.8	17.8	12.4	9.1
2007	27.8	26.4	20.1	11.5	14.3
New Brunswick					
1997	33.5	27.9	17.3	12.2	9.2
2007	27.5	32.2	16.8	10.3	13.2
Quebec					
1997	21.8	25.4	22.3	14.0	16.5
2007	18.6	25.6	23.7	13.3	18.8
Ontario					
1997	15.9	24.2	22.4	16.4	21.2
2007	17.4	21.4	21.9	13.5	25.9
Manitoba					
1997	27.5	26.3	21.1	13.2	11.8
2007	21.4	28.1	21.0	12.8	16.6
Saskatchewan					
1997	27.1	27.5	19.8	14.0	11.6
2007	21.2	24.6	23.0	13.6	17.6
Alberta					
1997	21.8	26.4	20.3	14.4	17.0
2007	11.8	27.8	21.6	14.3	24.4
British Columbia					
1997	17.1	20.0	23.5	19.8	19.6
2007	16.3	21.1	23.6	16.6	22.4

Source: Statistics Canada, Labour Force Survey, January to November.

Average earnings grew at a different pace not only provincially, but also by position in the overall distribution. In the private sector as well as in the whole economy, earnings rose by 1% to 6% in the lower half of the earnings distribution, compared with close to 12% in the top 5% of the distribution (Chart B). Within the upper halves of their distributions, earnings of men and women also grew at increasing rates in the upper reaches, suggesting that inequality grew within the upper half of each distribution.[2]

Yet, the degree to which average earnings grew at the top and the bottom of the distribution differed markedly across provinces. In Ontario, earnings rose roughly 10% in the top tenth but fell up to 5% in the bottom tenth (Chart C). In contrast, pay rates in Alberta increased 12% to 15% in the top tenth but even more (up to 17%) in the bot-

tom. In fact, growth across the earnings distribution displayed a U-shape everywhere except Ontario. At the very least, this suggests that earnings inequality did not evolve in a uniform manner in all provinces over the last decade. Nevertheless, within the upper half of each region-specific distribution, earnings generally tended to grow faster as one moved upward on the pay scale, suggesting a growing dispersion in this portion of the distribution.

Industry-specific trends

The relatively strong increases in the upper reaches of the top half of the earnings distribution were observed in most industries.[3] Earnings in the top 5% grew between 9 and 12 percentage points faster than in the middle in primary industries and construction, manufacturing, low-skilled services and highly skilled services (Chart D). Whatever the underlying factors, this pattern suggests that in several sectors of the economy pay rates rose substantially for some highly skilled workers over the last decade.[4]

While growth differed substantially along the distribution within a given industry, it varied moderately between industries. Average earnings grew between 8% and 10% in primary industries and construction, highly skilled services, and wholesale trade and other services (Table 3). This is about twice the rate in manufacturing, low-skilled services and public services.

Somewhat greater variations were observed in manufacturing. Manufacturing employees in Alberta saw their average earnings increase by 9% between 1997/1998 and 2006/2007 (Table 4). In contrast, their counterparts in British Colum-

Chart B   Earnings growth was strongest at the top of the wage distribution

% change (1997/1998 to 2006/2007)
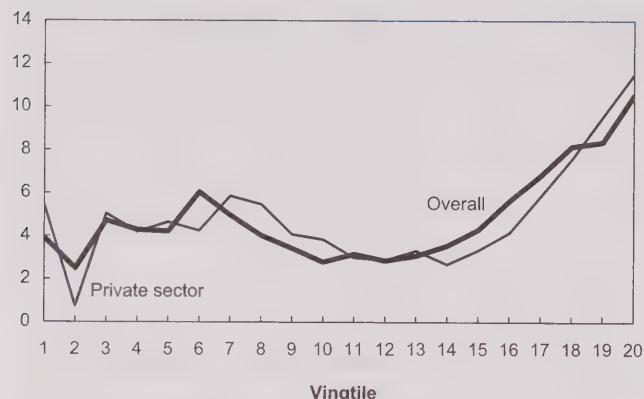
% change (1997/1998 to 2006/2007)
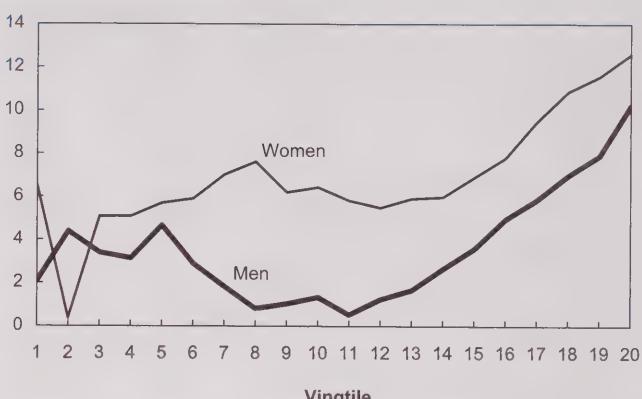
Source: Statistics Canada, Labour Force Survey, January to November.

bia experienced a drop of 3%.[5] Growth was moderate for manufacturing workers in the rest of Canada; most regions experienced either mild growth in average manufacturing wages or relatively little change in median manufacturing wages.

These relatively small changes (average and median) are noteworthy in light of the substantial job losses in manufacturing since 2004. In both Quebec and Ontario, manufacturing employment fell by at least 14% between 2004 and 2007 (Chart E), yet earnings varied very little. This suggests that, in these two

Chart C   Earnings growth by vingtile differed markedly across regions

% change (1997/1998 to 2006/2007)
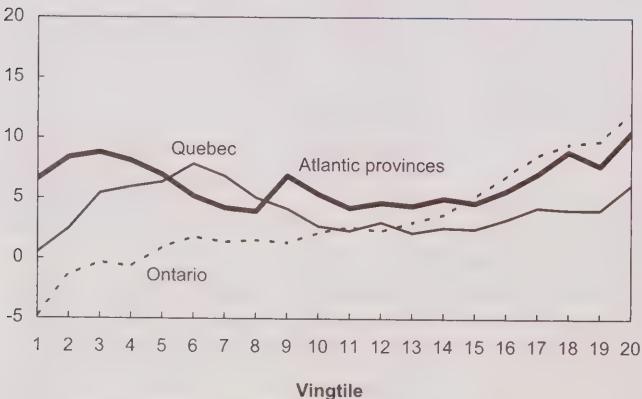
% change (1997/1998 to 2006/2007)
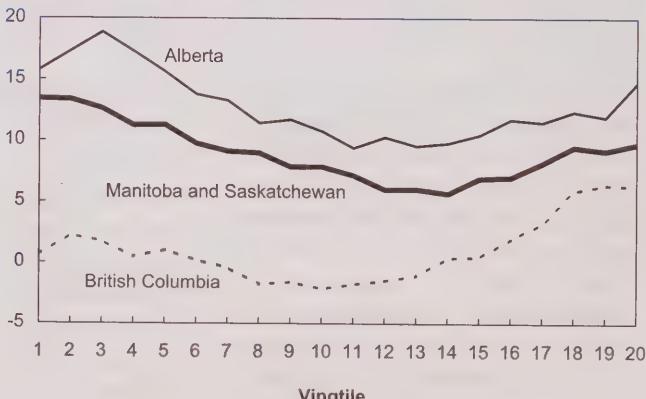
Source: Statistics Canada, Labour Force Survey, January to November.

Chart D   Earnings growth at the top was strong in most industries

% change (1997/1998 to 2006/2007)
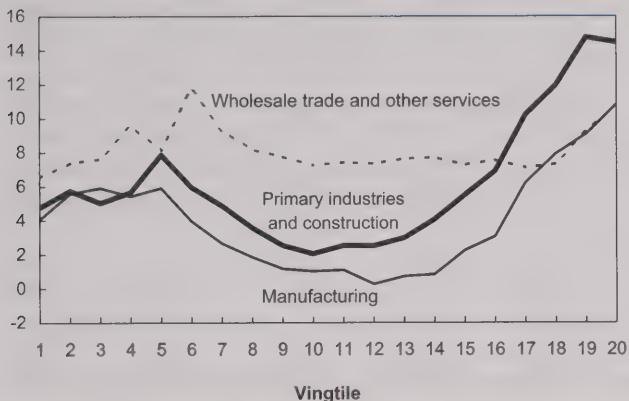
% change (1997/1998 to 2006/2007)
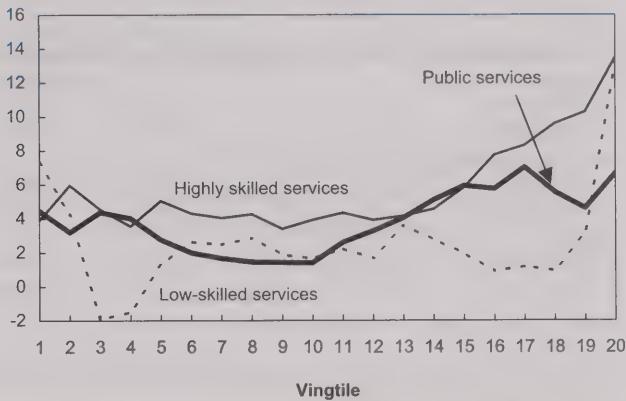
Source: Statistics Canada, Labour Force Survey, January to November.

Table 3 Hourly earnings by industry (2002 $)

	Earnings		Jobs paying				
	Mean	Median	Less than $10.00	$10.00 to $14.99	$15.00 to $19.99	$20.00 to $24.99	$25.00 or more
Industry	$				%		
Primary industries and construction							
1997	20.20	19.82	15.5	17.2	18.4	21.3	27.6
2007	22.01	20.46	13.2	16.2	19.1	17.8	33.7
Manufacturing							
1997	18.17	16.70	14.6	25.7	23.6	19.2	16.9
2007	18.99	17.02	12.7	26.4	24.7	15.1	21.1
Highly skilled services							
1997	18.41	16.66	14.5	27.2	23.8	15.9	18.5
2007	19.94	17.51	12.5	25.1	23.7	14.8	23.9
Low-skilled services							
1997	11.97	9.91	50.9	27.0	11.8	6.3	4.0
2007	12.43	10.21	48.8	28.4	12.6	5.0	5.2
Wholesale trade and other services							
1997	17.24	15.78	19.4	26.9	22.3	15.0	16.5
2007	18.91	17.18	14.6	24.7	23.1	15.6	22.1
Public services							
1997	20.66	19.19	7.9	19.6	26.4	18.6	27.5
2007	21.56	19.63	7.5	18.4	26.1	16.2	31.8
Computer and telecommunications sector							
1997	21.70	20.11	7.8	19.0	22.1	20.1	31.0
2007	24.37	22.46	5.6	16.4	18.8	17.2	41.9

Source: Statistics Canada, Labour Force Survey, January to November.

Table 4 Hourly earnings in manufacturing by region (2002 $)

|	Earnings		Jobs paying				
	Mean	Median	Less than $10.00	$10.00 to $14.99	$15.00 to $19.99	$20.00 to $24.99	$25.00 or more
Canada	$				%		
1997/1998	18.18	16.70	15.1	25.2	23.7	18.7	17.3
2006/2007	19.01	17.02	12.3	27.0	24.3	15.7	20.7
Atlantic provinces							
1997/1998	15.13	13.32	27.7	30.2	19.0	13.5	9.6
2006/2007	15.60	13.61	23.0	34.5	20.3	11.0	11.1
Quebec							
1997/1998	16.63	15.14	21.4	28.0	22.7	15.4	12.5
2006/2007	17.61	15.64	15.0	30.3	25.6	13.2	15.9
Ontario							
1997/1998	19.31	17.94	10.3	23.5	25.9	19.8	20.5
2006/2007	20.24	17.97	10.1	23.8	24.9	16.1	25.1
Manitoba and Saskatchewan							
1997/1998	15.33	14.33	26.5	26.8	25.3	12.7	8.6
2006/2007	15.96	14.57	16.6	36.3	25.0	13.2	9.0
Alberta							
1997/1998	18.15	16.29	14.9	29.7	20.2	16.5	18.6
2006/2007	19.83	17.81	6.6	29.1	23.5	18.8	22.1
British Columbia							
1997/1998	20.20	20.59	8.4	19.2	19.4	29.7	23.3
2006/2007	19.62	18.50	12.0	23.2	19.3	22.8	22.7

Source: Statistics Canada, Labour Force Survey, January to November.

Chart E Despite recent decreases in employment, average earnings held steady in Quebec and Ontario manufacturing

Index (1997=100)

Quebec

Index (1997=100)

Ontario
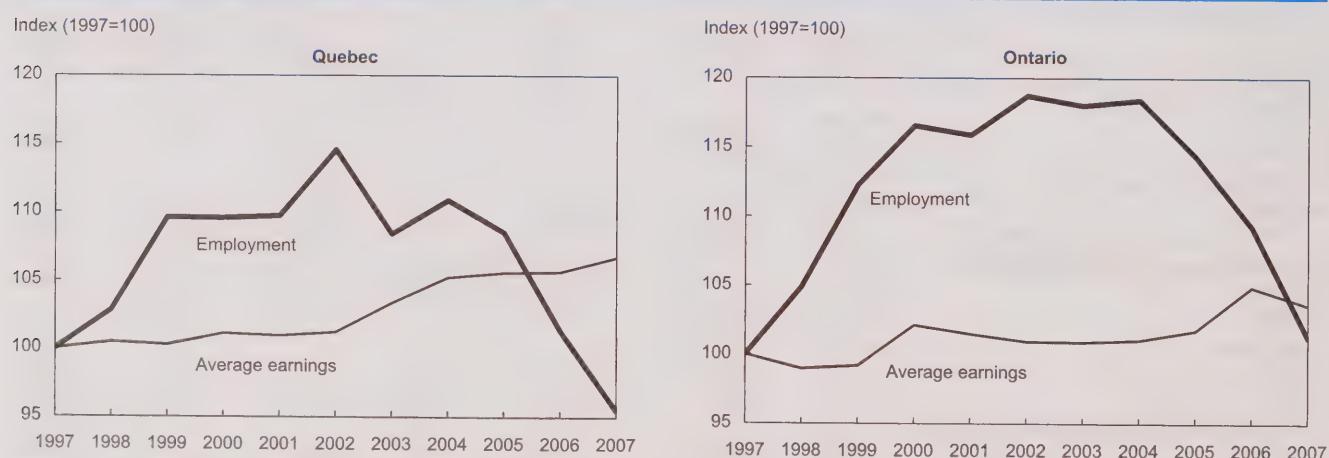
Source: Statistics Canada, Labour Force Survey, March and September.

provinces, manufacturing firms that suffered a decline in demand for their product adjusted mainly through layoffs rather than wage changes.

A similar story emerges in the computer and telecommunications (CT) sector.[6] As employment in this sector rose a solid 39% between 1997 and 2001, average earnings rose 10%. Employment then fell 15% between 2001 and 2005 before increasing again. Meanwhile, earnings changed very little. As a result, they ended up growing 12% between 1997 and 2007, almost twice the rate in the private sector.[7]

This meant that in 2007, employees in the CT sector earned $24.37 per hour, on average, for their labour services. This is about twice the rate of their counterparts employed in low-skilled services and about $7 more than the average in the private sector.

Low pay in manufacturing and low-skilled services

The proportion of manufacturing jobs paying less than $10 per hour fell by about 3 percentage points between 1997/1998 and 2006/2007. However, the different earnings trends by region had a clear impact on the evolution of low-paid employment in this

Table 5 Hourly earnings in selected occupations in the private sector

	Mean			Median			Jobs in private sector in 2006/2007
	1997/ 1998	2006/ 2007	Change	1997/ 1998	2006/ 2007	Change	
Occupation	2002 $		%	2002 $		%	%
Specialist managers	25.09	30.89	23.1	23.02	29.03	26.1	2.8
Other managers	21.74	25.59	17.7	19.11	22.81	19.3	5.3
Professional occupations in business and finance	21.88	25.74	17.6	19.87	23.14	16.5	3.0
Computer and information systems professionals	24.32	27.78	14.3	23.23	26.95	16.0	2.2
Engineers	27.63	30.09	8.9	26.43	28.52	7.9	1.5
Technical related to natural and applied sciences	20.17	21.42	6.2	19.00	19.52	2.7	3.6
Clerical	14.27	14.22	-0.3	13.25	13.48	1.7	10.6
Assemblers and machine operators in manufacturing and labourers in processing, manufacturing and utilities	15.06	15.15	0.6	13.92	13.79	-1.0	8.3
Supervisors in manufacturing	20.94	20.66	-1.3	20.35	19.81	-2.6	1.0
Construction trades	18.05	18.45	2.2	17.03	17.50	2.8	2.6
Cashiers, retail salespersons and sales clerks	10.67	10.34	-3.0	8.83	8.74	-1.0	6.5
Food and beverage service	9.88	10.69	8.2	8.81	9.20	4.4	2.1
Other sales and service	12.39	12.82	3.5	10.43	10.83	3.8	17.0
Other	17.27	17.88	3.6	16.11	16.42	1.9	33.7
All private-sector jobs	16.40	17.34	5.7	14.48	15.05	3.9	100.0
Managers	22.79	27.41	20.3	20.59	25.05	21.7	8.1
Other employees	15.74	16.46	4.6	14.04	14.52	3.4	91.9

Source: Statistics Canada, Labour Force Survey, January to November.

Chart F   Earnings in the private sector increased more for managers than other employees in all industries and firm sizes

% change (1997/1998 to 2006/2007)

Managers (average)   Other employees (average)
Managers (median)   Other employees (median)
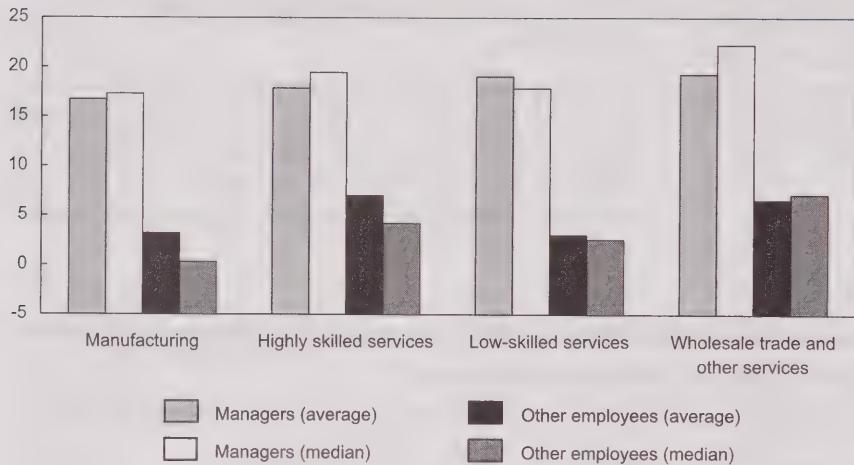
% change (1998/1999 to 2006/2007)

Firm size
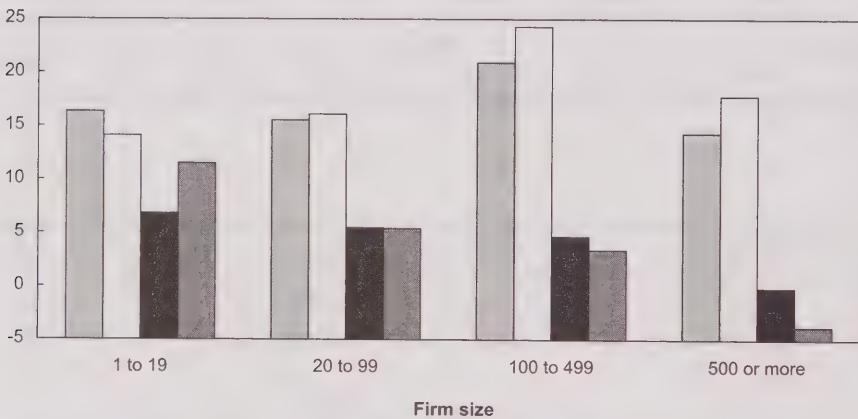
Source: Statistics Canada, Labour Force Survey, January to November.

sector. Specifically, the share of manufacturing jobs paying less than $10 per hour fell by 5 percentage points or more in all provinces except Ontario and British Columbia. In these two, at least 10% of manufacturing jobs paid less than $10 per hour in 2006/2007, similar to the 1997/1998 period.

The incidence of low-paid employment changed little in low-skilled services. At the national level, the proportion of jobs paying less than $10 per hour amounted to 49% in 2006/2007, a slight decline from the 51% observed in 1997/1998. While most regions did not witness substantial changes in the incidence

of low-paid employment in this sector of the economy, Alberta reduced its proportion by fully 12 percentage points.

In sum, whether trends are analyzed for all industries or for some specific sectors such as manufacturing and low-skilled services, the degree to which low-paid employment fell over the last decade differed markedly by province.

Earnings of managers up sharply over the last decade

The greater earnings increase among highly paid employees than among those in the middle of the earnings distribution suggests that managers and professionals might have enjoyed stronger pay growth than other occupations (Table 5). In addition, the relatively strong performance of the CT sector (in terms of earnings) indicates that computer and information systems professionals might have fared better than other highly skilled workers such as engineers.

Between 1997/1998 and 2006/ 2007, average earnings of managers grew a solid 20%, four times the rate for other employees. Pay for specialist managers rose 23%, while other managers and professionals in business and finance saw an 18% increase in their paycheques.[8] Average earnings of computer and information systems professionals increased by 14%, compared with 9% for engineers. Median earnings of specialist managers, other managers, professionals in business and finance, and computer and information systems professionals—accounting for 13% of private-sector of employment grew between 16% and 26%.[9]

In contrast, earnings stagnated for about 26% of private-sector employment in 2006/2007. Clerical workers and manufacturing employees involved in blue-collar work or supervision tasks saw virtually no growth. Cashiers, retail salespersons and sales clerks also did not see their paycheques increase.

The strong growth in pay for managers was not driven simply by the economic boom observed in Alberta. Average earnings of managers grew 18% in the Atlantic provinces, 19% in Quebec and Ontario, 21% in Manitoba and Saskatchewan, 27% in Alberta and 15% in British Columbia. In contrast, other employees saw increases of 5% in the Atlantic provinces and Quebec, 3% in Ontario, 9% in Saskatchewan and Manitoba, 12% in Alberta and virtually zero in British Columbia. The faster wage growth of managers was also seen in all industries and for firms of all sizes (Chart F).[10]

Since the proportion of workers with a university degree increased more among managers (from 29% in 1997/1998 to 38% in 2006/2007) than among other employees (12% to 17%), the strong earnings growth of managers might have been driven mainly by differential increases in educational attainment. Multivariate analyses do not support this view. After controlling for age, education and seniority within the company, 80% of the difference persists.[11] Furthermore, 75% of the difference in growth rates remains after adding controls for industry (at the 4-digit level) and region. Taken together, these results indicate that the sharp earnings growth experienced by managers over the last decade was widespread and was not driven mainly by compositional effects.[12]

The strong earnings growth of managers had a substantial impact on the upper end of the earnings distribution. Between 1997/1998 and 2006/2007, hourly earnings among the top 5% of private-sector employees increased by 11.5%, compared with 3.6% for their counterparts in the middle of the distribution (vingtiles 9 to 11).

If average earnings of managers had increased by 12.5% (i.e. half way between the observed 20.3% and the 4.6% for other employees), earnings among the top 5% of private-sector employees would have increased by 8.6% only (Chart G), while earnings in the middle of the distribution would have barely changed, increasing by 3.3%. The difference in growth rates between the top 5% and those in the middle would then have decreased from 7.9 percentage points to 5.3 (i.e. about one-third could be explained).

Chart G   At least one-third of the earnings growth among the top 5% in the private sector can be accounted for by the strong growth for managers

% change (1997/1998 to 2006/2007)
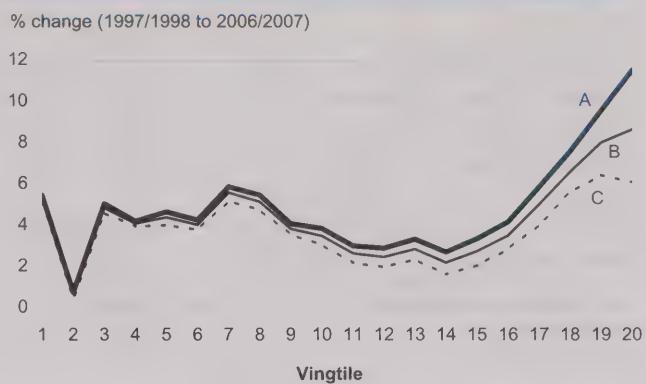
A: Observed changes in average earnings.
B: Changes in average earnings, if the average for managers had increased by 12.5% rather than 20.3%.
C: Changes in average earnings, if the average for managers had increased by 4.6% rather than 20.3%
Source: Statistics Canada, Labour Force Survey, January to November.

Furthermore, had average earnings of managers increased by the 4.6% rate of other private-sector employees, hourly earnings among the top 5% would have increased by only 6.1%, while those in the middle would have seen 2.9%. The difference between the top 5% and the middle would have decreased to 3.2 points, with about 60% being accounted for by the more rapid earnings growth of managers. In other words, managers' rapid earnings growth accounted for between 33% and 60% of the difference in growth rates between the top 5% and those in the middle of the distribution.

Earnings growth not that different by education

Since earnings rose substantially in managerial and professional occupations in business and finance but stagnated in blue-collar manufacturing and clerical occupations, it might be assumed that they increased more among highly educated workers than among the less educated. However, for both men and women, under 35 years of age or aged 35 to 64, earnings growth did not differ much by education (Table 6).

Table 6 Hourly earnings by education

	Mean			Median		
	1997/1998	2006/2007	Change	1997/1998	2006/2007	Change
Men under 35		2002 $	%		2002 $	%
Less than high school	12.19	12.29	0.8	10.97	10.78	-1.7
High school graduate	14.10	14.47	2.7	12.92	13.33	3.1
Trades certificate or diploma	16.84	17.93	6.5	16.11	16.68	3.5
Post-secondary education	15.93	16.54	3.8	14.66	15.12	3.2
Bachelor degree	20.55	21.58	5.0	19.49	20.22	3.8
Graduate degree	24.09	24.55	1.9	23.04	23.36	1.4
Men 35 to 64						
Less than high school	17.23	17.13	-0.6	16.56	16.10	-2.8
High school graduate	20.08	19.67	-2.0	19.30	18.38	-4.7
Trades certificate or diploma	21.26	21.15	-0.5	21.23	20.35	-4.1
Post-secondary education	22.87	22.75	-0.5	22.08	21.27	-3.6
Bachelor degree	27.75	27.95	0.7	27.17	26.78	-1.5
Graduate degree	31.46	30.78	-2.2	31.18	30.05	-3.6
Women under 35						
Less than high school	9.59	9.60	0.1	8.33	8.17	-2.0
High school graduate	11.67	11.63	-0.4	10.33	10.11	-2.1
Trades certificate or diploma	12.65	13.46	6.4	11.35	12.49	10.0
Post-secondary education	13.95	14.44	3.5	12.86	13.48	4.8
Bachelor degree	18.39	19.26	4.8	17.70	18.35	3.6
Graduate degree	21.51	22.44	4.3	20.88	21.82	4.5
Women 35 to 64						
Less than high school	11.91	12.10	1.7	11.04	10.79	-2.2
High school graduate	15.05	15.29	1.6	14.35	14.14	-1.5
Trades certificate or diploma	14.89	15.51	4.2	14.12	14.32	1.5
Post-secondary education	18.05	18.58	2.9	17.06	17.11	0.3
Bachelor degree	23.41	23.78	1.6	23.28	22.75	-2.3
Graduate degree	27.15	27.45	1.1	27.21	27.33	0.4

Source: Statistics Canada, Labour Force Survey, January to November.

Men under 35 with a high school diploma or less saw their earnings increase by at most 3% (average or median), whereas those with a bachelor's or higher degree experienced pay increases that varied between 1% and 5%. Among men aged 35 to 64, average earnings remained virtually unchanged at all education levels while median wages fell between 2% and 5%.

Very similar patterns were seen for women. Those under 35 with a high school diploma or less saw average earnings stagnate or median earnings drop slightly. In contrast, those with a bachelor's degree had a slight increase of 4% to 5%. In this age group, women with a trades certificate did well, as their earnings grew between 6% and 10%. As for men aged 35 to 64, earnings growth varied very little by education among women of that age. Hence, the relatively strong growth in many industries in the upper ranges of the earnings distribution appears to have affected mainly the inter-occupational pay structure, rather than the returns to education.

Earnings growth by age and seniority

Canada's unemployment rate fell from 9.1% in 1997 to under 6% in the last quarter of 2007—below 4% in Alberta. In this context, new entrants to the labour market might have enjoyed stronger earnings growth than other employees, as labour shortages could develop in some sectors. If so, earnings of young employees should have risen faster than those of their older counterparts.

Chart H **The earnings gap between newly hired employees and others widened during the 1990s for the 35-to-44-year-olds.**

Index (1981=100)

Men

Index (1981=100)

Women
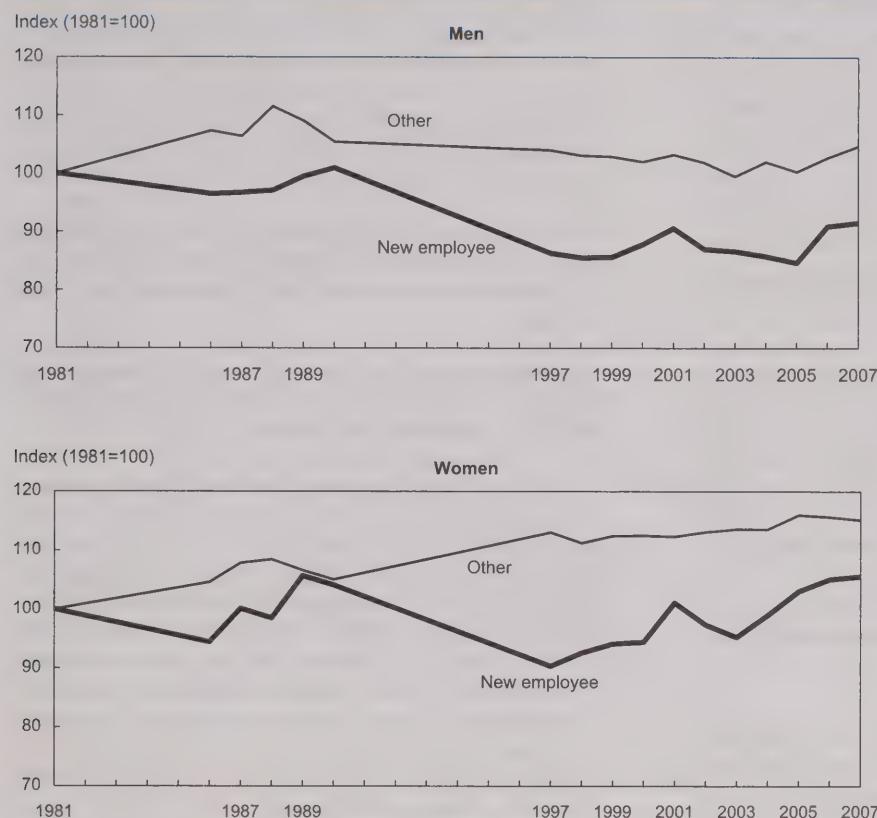
Sources: Statistics Canada, Survey of Work History, 1981; Labour Market Activity Survey, 1986 to 1990; Labour Force Survey, March and September, 1997 to 2007.

greater seniority (Chart H). Nevertheless, earnings of newly hired employees ended up growing more slowly than those of other employees since the early 1980s.[13]

While the reasons underlying this pattern are unclear, one explanation is that, since the 1980s, Canadian employers may have responded to technological changes and more intense competition within industries and from abroad by cutting pay for newly hired workers while maintaining it for workers with greater seniority. They might have done so in order to maintain morale and productivity among their core workers.

Summary

Numerous changes to the economy have helped alter the pay structure in Canada over the last decade. As expected, pay rates have risen in Alberta, especially since 2004. In Ontario and Quebec, earnings in manufacturing did not fall substantially, despite sharp decreases in employment in recent years. Average earnings in the CT sector ended up rising 12% in real terms, after the turbulence of the 2001 to 2004 period.

In virtually all industries and regions, pay rates in the upper half of the distribution grew increasingly larger toward the top of the scale. This suggests that earnings dispersion likely increased in the upper half of the distribution over the last decade.

Not all provinces have been equally able to reduce the incidence of low-paid employment. Between 1997 and 2007, the proportion of jobs paying less than $10 per hour fell markedly in all provinces except Newfoundland and Labrador,

And indeed, this is what happened. Between 1997/1998 and 2006/2007, earnings (average or median) of men under 35 grew at least 7% while those of their counterparts 35 to 54 either fell or rose by at most 4%. Median earnings of women under 35 also grew more than those of their counterparts aged 35 to 54. Higher earnings growth among men under 35 was seen not only in Alberta, but also in most other regions. The only exceptions were Ontario and British Columbia,

where growth in average earnings did not differ much between the two age groups. For women, age differences within regions were generally less pronounced.

The strong labour market conditions in recent years also benefited some newly hired employees. Among workers aged 35 to 44, earnings of employees with two years of seniority or less grew at least 5 percentage points faster than those of their counterparts with

Ontario and British Columbia. In manufacturing, the proportion of low-paid jobs dropped everywhere except Ontario and British Columbia.

Of all workers, managers saw the greatest improvement in their pay rates since the late 1990s. Their earnings grew sharply in most industrial groups and in firms of all sizes. In contrast, blue-collar workers in manufacturing, clerical employees and salespersons in retail trade experienced virtually no earnings growth.

Surprisingly, the strong earnings growth for managers and some professionals in business and finance occupations did not translate into sharp increases among highly educated workers. For both men and women, returns to education did not change much over the last decade.

However, young workers and some newly hired employees did fairly well over the past ten years. In most regions, earnings growth for men under 35 surpassed that of their counterparts aged 35 to 54. Yet, within age groups, earnings of newly hired employees ended up growing more slowly than those other employees over the 1981 to 2007 period.

Perspectives

■ Notes

1. Throughout the study, hourly earnings are expressed in 2002 dollars using province-specific consumer price indexes (CPI). Since the CPI is a measure of price change from one time period to another, rather than a measure of price levels, it cannot be used to indicate differences in price levels between provinces. For this reason, interprovincial differences in real earnings (or in the share of jobs paying, say, less than $10 per hour) in a given year do not necessarily fully measure interprovincial differences in the purchasing power provided by one dollar of earnings in that year.

2. The pattern for men is consistent with Figure 4 of Lemieux (2007), which shows that changes in male real earnings by percentile displayed a U-shape between 1989 and 2004 in the United States. Note that the proportion of private-sector employees who are union members or covered by a collective agreement fell from 22% in 1997 to 19% in 2007 in Canada. For the whole economy, the corresponding numbers are 35% and 33%, respectively.

3. The six major industry groups are primary industries and construction, manufacturing, highly skilled services, low-skilled services, wholesale trade and other services, and public services. Highly skilled services [based on the North American Industry Classification System (NAICS)

of 2002] comprise transportation and warehousing; information and cultural industries; finance and insurance; real estate and rental and leasing; professional, scientific and technical services; management of companies and enterprises; and administrative and support, waste management and remediation services. Low-skilled services comprise retail trade and accommodation and food services. In 2007, employment was distributed as follows: primary industries and construction (4%); manufacturing (15%); highly skilled services (24%); low-skilled services (17%); wholesale trade and other services (17%); and public services (24%).

4. Whether this sharp wage growth is observed for highly educated workers or for those employed in managerial and professional occupations is examined later in the article.

5. Growth in median manufacturing earnings differed even more, as Alberta enjoyed a 9% increase while British Columbia suffered a 10% decrease.

6. The CT sector comprises the following NAICS industries: commercial and service industry machinery; computer and peripheral equipment; communications equipment; audio and video equipment; semiconductor and other electronic components; navigational, measuring, medical and control instruments; computer and communications equipment and supplies wholesaler-distributors; software publishers; wired telecommunications carriers; wireless telecommunications carriers (except satellite); telecommunications resellers; satellite telecommunications; cable and other program distribution; other telecommunications; Internet service providers; web search portals; data processing, hosting, and related services; computer systems design and related services; and electronic and precision equipment repair and maintenance. It amounted to 4% of total employment in 2007.

7. More than half of the earnings growth in the CT sector seems to be related to changes in the characteristics of the workforce. After controlling for age, seniority (through quadratic terms in age and seniority) and education and interacting these variables with sex, regressions of log earnings on these regressors and a year effect (a binary indicator set to 1 in 2007, 0 in 1997) suggest that average earnings rose 5% between 1997 and 2007.

8. Specialist managers comprise administrative services managers; managers in engineering, architecture, science and information systems; sales, marketing and advertising managers; and facility operation and maintenance managers. Professional occupations in business and finance comprise auditors, accountants and investment professionals, and human resources and business service professionals.

9. Similar results are obtained using weekly earnings.

10. Average earnings of other employees rose 6% in primary industries and construction and 1% in public services. The corresponding numbers for managers in these two sectors were 26% and 12%, respectively. Since firm size was not available from the LFS in 1997, Chart F shows growth by firm size from 1998/1999.

11. Adding controls for age, seniority (through quadratic terms in age and seniority) and education (and interacting these variables with sex) to regressions that initially include a binary indicator for managerial occupations, a period effect (a binary indicator of 1 in 2006/2007, 0 in 1997/1998) and an interaction term between the two reduces the value of this interaction term from 0.143 to 0.116.

12. Between 1998/1999 and 2006/2007, log earnings of managers grew 11 points faster than those of other employees. Three-quarters of that difference remains after controlling for firm size (4 categories), industry (4-digit level), region, age, education and seniority.

13. Since the surveys used in Chart H differ somewhat in terms of their content and the procedures used to impute earnings and to detect outliers, it is difficult to make definitive statements regarding the magnitude of real wage growth since 1981. Nevertheless, comparisons of the evolution of relative earnings between groups (e.g. between newly hired employees and other employees) remain meaningful. As Morissette and Johnson (2005) showed, within age groups, earnings of newly hired male and female employees fell substantially relative to those of others during the 1990s.

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In the works

Some of the topics in upcoming issues

■ Investment allocation

Canadian families' asset allocation within registered plans and non-registered investments by demographic and economic characteristics.

■ Profile of the Canadian armed forces

The socio-demographic and occupational characteristics of the Canadian military, with a comparison of the prevalence of work stress, as well as social and psychological well-being among service members and the general working population.

■ Work–life balance among shift workers

Shift workers play an important role in an economy that demands goods and services 24/7. This paper examines the time-use patterns and work-life balance of Canada's shift workers.

■ Change in wealth of Canadians

The wealth situation of the young, elderly and those in their peak earnings span of life cycle.

■ Teenage mothers

Women who give birth in their teenage years have more difficulty completing high school and continuing on to post-secondary education, hence their higher likelihood of living in low income.

■ Parental benefit claim patterns

The use of parental leave by fathers and its impact on family and workplace dynamics and how both mothers and fathers are making use of the additional 25 weeks of parental benefit.

■ Wages of older workers

With the aging of the baby-boomers, age-earnings profiles will be of even more importance in forecasting future pension benefits payout.

PERSPECTIVES ON LABOUR AND INCOME

The quarterly for labour market and income information

What's new?

Recent reports and studies

■ From Statistics Canada

■ *The 2006 Canadian immigrant labour market*

Immigrants born in Southeast Asia, particularly the Philippines, had the strongest labour market performance of all immigrants to Canada in 2006, regardless of when they landed.

Many very recent immigrants (landing between 2001 and 2006) in the core working-age group, i.e. aged 25 to 54, regardless of their region of birth, experienced more difficulties in the labour market than the Canadian born.

Among very recent immigrants, only those born in Southeast Asia had unemployment, employment and participation rates more or less on par with the core working-age Canadian-born population.

Those born elsewhere in Asia (including the Middle East) or in Latin America, Europe or Africa had higher unemployment rates and lower employment rates in 2006 than their Canadian-born counterparts.

For more information, see the February 13, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ *Scientists and engineers and urban growth*

It is not just the prevalence of university graduates in a city that has a defining impact on the growth in employment, but their mix as well.

Indeed, the broad set of university degree holders in a city is consistently connected to job growth. However, the effectiveness of this group is enhanced by a higher share of scientists and engineers—specialized workers who are directly involved in developing and implementing innovations.

Degree holders working in culture occupations, on their own or through interactions with other types of degree holders, did not appear to have a particularly strong impact on growth.

For more information, see the January 8, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ *Multinationals in Canada*

Foreign-controlled businesses operating in Canada make large investments in knowledge creation via innovation, advanced technology and skilled labour.

These investments frequently translate into superior market outcomes, as foreign-controlled businesses often enjoy relatively high productivity compared with many of their domestic competitors.

Foreign multinationals make valuable contributions to the Canadian economy. Their plants not only have higher productivity, they also tend to be more capital intensive, pay higher wages, and hire more white-collar workers than their domestic competitors.

For more information, see the November 13, 2007 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ From other organizations

■ *Recent trends in shift work and flexible schedules*

The traditional work schedule for an American employee has long been 9 a.m. to 5 p.m., Monday through Friday. However, the Work Schedules and Work at Home survey, a supplement to the Current Population Survey in May 2004, reveals that substantial proportions of schedules do not fit this paradigm. For instance, nearly one-third of wage and salary workers can vary their beginning and ending hours on their primary jobs; about one-fifth work other than a regular daytime shift; and a slightly smaller proportion work on Saturday, Sunday, or both.

Alternate shifts and flexible work schedules are often

determined by the demands of the industry, rather than by workers' preferences. However, schedule considerations and flexibility are influential in career-planning and labour market decisions of many workers.

Because of the high prevalence of both shift work and flexitime among part-time workers, the article analyzes total employment, including both full- and part-time workers in most cases. See "A time to work: Recent trends in shift work and flexible schedules" by Terence M. McMenamin, *Monthly Labor Review*, U.S. Department of Labor, December 2007, vol. 130, no. 12.

■ *More workers in their golden years*

For the past several decades, the U.S. labour force has consistently posted high growth rates. According to the Bureau of Labor Statistics, these elevated rates are likely to be replaced by a much lower growth rate over the 2006-to-2016 period, principally for two reasons: the baby-boom generation is aging and retiring, and the labour force participation rate of women appears to have peaked.

In the second half of the 20th century, labour force growth was especially rapid as baby-boomers entered the labour market. At the same time, the labour force participation of women expanded rapidly. Both trends have run their course. However, due to significant increases in both their participation rate and their share of the labour force, the growth of the older labour force in the next decade will be much higher than the growth of other age groups.

The civilian labour force is projected to increase by nearly 13 million, reaching 164.2 million in 2016. This 0.8% annual growth rate is lower than the 1.2% registered during the previous 10-year period. In addition, the labour force will continue to age: the 55-and-older workforce is expected to grow by 46.7%, more than 5 times the growth projected for the aggregate labour force.

The BLS projects that the labour force participation rate of the U.S. population will be 65.5% in 2016. After increasing for more than 50 years, the proportion of the population in the labour force reached an all-time high of 67.1 percent in 1997. The participation rate

maintained that level until 2001, when the U.S. economy entered a recession, causing the rate to fall. Unlike its behaviour during previous downturns, in which it would soon return to the pre-recession level, the participation rate continued to decline long after the 2001 recession. After dropping to 66.0 percent in 2004 and 2005, the participation rate had a small increase of 0.2 percentage points in 2006. See "Labor force projections to 2016: More workers in their golden years" by Mitra Toossi, *Monthly Labor Review*, U.S. Department of Labor, November 2007, vol. 130, no. 11.

■ *U.S. productivity growth resurgence*

Information technology is now seen as critical to the dramatic acceleration of U.S. labour productivity growth in the mid 1990s. This paper traces the evolution of productivity estimates to document how and when this perception emerged. Early studies concluded that information technology was relatively unimportant. Only after the massive information technology investment boom of the late 1990s did this investment and underlying productivity increases in the information technology–producing sectors come to be identified as important sources of growth.

Although information technology has diminished in significance since the dot-com crash of 2000 and observed growth rates have slowed recently, private sector productivity growth is expected to average around 2.4% per year for the next decade, only moderately below the average of the post-1995 period. See "A retrospective look at the U.S. productivity growth resurgence" by Dale W. Jorgenson, Mun S. Ho and Kevin J. Stiroh, *Journal of Economic Perspectives*, American Economic Association, Winter 2008, vol. 22, no. 1.

Perspectives

# PERSPECTIVES

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PERSPECTIVES

ON LABOUR AND INCOME

■ Departments

■ Articles

5 Hours polarization revisited

Jeannine Usalcas

Hours of work can vary dramatically from job to job. And some
research has indicated that the greater inequality of earnings into
the mid-1990s was accompanied by increasing polarization of
working hours. More recently, attention has focused on a decline
in average working hours. This article quantifies changes in average
work hours since the 1970s and examines how changes in the
distribution of work hours contribute to the overall trend.

17 Retiring together, or not

Grant Schellenberg and Yuri Ostrovsky

Throughout much of the last century, older couples faced only
one retirement decision—the husband's. However, the dramatic
rise and sustained participation of women in the paid labour force
since the 1970s transformed the retirement transitions of married
couples—increasingly, couples had to make two decisions and
balance the preferences and constraints of partners who both
made substantial contributions to household income. This article
looks at the extent to which spouses synchronize the timing of
their retirements, the factors associated with taking one or another
pathway into retirement and changes in patterns of retirement
through the 1990s.

25 Work-related training

Matt Hurst

Lifelong learning has become a virtual career necessity. Not all
pressures to train come from the employer—employees have their
reasons too. This article looks at how participation in job-related
courses changed between 1993 and 2002 across a number of
social and demographic characteristics. In particular, the factors
affecting training, whether employer supported or self funded, are
explored.

The 2006 Census hit the streets during the hottest labour market in a generation, with many regional unemployment rates at long-term lows and wage increases outstripping price hikes. While technological advances reduced manpower needs, tens of thousands of temporary workers were still required—which proved to be a problem in many areas. Census managers extended the collection period and moved an unprecedented number of enumerators across regions to attain acceptable data quality while remaining within budget.

The general view is that teenage childbearing will have long-term negative effects on the well-being of the mother—she may have more difficulty completing high school, which means she may be less likely to pursue postsecondary education and acquire skills for better jobs. Since low-skilled jobs tend to pay less, teenage mothers would have a higher likelihood of living in low income. This study looks at women aged 30 to 39 to determine whether teenage childbearing is related to lower long-term socioeconomic characteristics, with the focus on educational attainment, labour force participation, and living in low income.

There was almost no change in the proportion of children under age 18 living in a low-income family from 1989 to 2004, despite government interventions and a strong economy since the 1990/1992 recession. In addition, the disparity between well-off and low-income children increased, the economic situation of families of well-off children having improved. Family situation and parents' insufficient employment had the greatest influence on children's vulnerability to low income. It is a changing phenomenon, as few children remain in low income for several consecutive years.

Highlights

In this issue

■ Hours polarization revisited ... p. 5

■ Between 1997 and 2006, the average standard work week continued to decline, despite stronger growth in full- rather than part-time employment.

■ In 2006, fewer workers were at the extremes—under 15 hours or 49 hours or more—marking a shift from the increasing polarization seen from the 1980s to mid-1990s.

■ Women increased their hours as more worked 30 to 40 hours. Men's hours declined as fewer worked 49 or more. Older workers had the largest shift away from very long hours and the largest growth in working between 15 and 39 hours in 2006.

■ The strong labour market in the last ten years attracted more women, mothers with dependent children, youth and older workers into the labour force—groups that generally prefer varied hours.

■ Retiring together, or not ... p. 17

■ Among 29% of dual-earner couples in which one spouse retired in 2001, the other spouse retired within two years. However, the most common pattern was for a wife to retire after her husband (43%).

■ Dual-earner spouses appear to be retiring in a more independent manner. Between 1986 and 2001, the proportion of dual-earner spouses retiring within two years of each other declined by 2 percentage points and the proportion retiring within four years declined by 11 points. Conversely, the proportion of wives retiring five or more years later increased by 7 points; the proportion of husbands by 4 points.

■ Among the factors associated with spousal retirement transitions are the husband's age, the age difference between the spouses, receipt of Employment Insurance benefits, earnings and pension coverage.

■ Work-related training ... p. 25

■ Participation in job-related training supported by the employer remained fairly steady at about 23% from 1993 to 2002.

■ However, participation in job-related training with no employer support rose from 4% to 10% over the same period, almost entirely because of full-time workers.

■ Education is a prime driving force behind participation in job-related training, and its effect grew larger between 1993 and 2002 for women.

■ Life after teenage motherhood ... p. 41

■ Women who had their first child under age 20 (teenage mothers) were 17 percentage points less likely to have completed high school than women who had their first child later (adult mothers). Teenage mothers were also at least 14 percentage points less likely to complete their postsecondary studies than adult mothers.

■ Overall, almost no difference was seen in labour force participation between teenage mothers and adult mothers of similar education levels. The only difference was that teenage mothers with postsecondary education were more likely to be in full-year full-time employment than adult mothers with postsecondary education.

- Teenage mothers and adult mothers with similar education had almost the same probability of living in low income.

- Unlike in the United States, a smaller proportion of immigrants in Canada were teenage mothers. Only 9% of immigrants who were a visible minority and 6% of immigrants who were not a visible minority were teenage mothers compared with 11% of those Canadian-born and not a visible minority.

■ Low-income children   ... p. 51

- Low income among children is a very dynamic phenomenon in Canada. Many children experienced low income between 1999 and 2004, but few remained in this situation for the entire period.

- While children living in lone-parent families are much more vulnerable to low income, those in two-parent families are not exempt from it. In 2004, half of the children living in low income were part of a two-parent family. In both one-parent and two-parent families, total work effort in the family and parents' working conditions were key indicators of vulnerability to low income.

- Despite sustained economic growth since the mid-1990s, the rate of low-income among children was no lower in 2004 than in 1989—the peak of the previous business cycle. Indeed, the gap between the net family income of low-income children and that of other children widened in the past decade.

■ What's new?   ... p. 61

■ From Statistics Canada

Community vulnerability to population and employment decline

Earnings inequality and earnings instability of immigrants

Income security in retirement among the working population

Employment growth among lone mothers in Canada and the United States

Income of Canadians

How families respond to layoffs

■ From other organizations

Driving forces of the Canadian economy

Understanding productivity

A wave of protectionism?

Minority self-employment in the United States

Obesity, disability, and the labour force

Hours polarization revisited

Jeannine Usalcas

From the student with a part-time job to the workaholic manager, working hours can vary dramatically. The economy supplies jobs according to the demands of both employers and employees, although the match is not necessarily perfect. Workers unable to find a sufficient amount of work may suffer financially; those in very demanding jobs may compromise other aspects of their lives. Employers may be in control when labour is in abundant supply, but may have to tailor jobs into more attractive packages of hours and benefits when the labour market is tight.

Research to the mid-1990s showed that greater inequality of earnings was accompanied by increasing polarization of work hours (Morissette 1996). Not only were more people working very short and very long hours, but longer hours were concentrated among those with higher earnings and shorter hours among those with low earnings.

Recent attention has focused on a decline in actual working hours. Although a portion of the decline could be explained by survey methodology, other factors played a part (Galarneau, Maynard and Lee 2005). These included shifts in family work patterns, more growth in industries with lower average hours and the aging of the workforce. This article quantifies the decline in average usual working hours over 10 years and examines how changes in the distribution of working hours contributed to the overall trend.

Canada is not the only country showing a decline in usual hours worked per week. Of the 24 countries reported in the OECD database, 22 showed a decline in their weekly usual hours worked since 1997 (for further details see *International comparisons*).

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Over the last thirty years, the average workweek declined, from 38.6 hours in 1976 to 36.5 in 2006. The bulk of the decline occurred between 1976 and 1996 (-1.6 hours) and can be explained mostly by more employment growth in part-time work than in full-time (30 hours or more). The proportion of people working part time increased from around 13% in 1976 to a high of 19% in 1996. But after 1997, part-time growth weakened, and full-time became stronger. Why then the continuing decline in usual hours when more full-time workers are coming into the labour market?

This paper uses the Labour Force Survey to look at average usual hours worked per week (at main job) and changes in work-hour distributions (see *Data sources and definitions*). Work-hour changes reflect employment growth, demographic shifts and shifts in industry, occupation, class of worker and educational attain-

Chart A   Average full-time hours down, average part-time up

Source: Statistics Canada, Labour Force Survey.

ment patterns. The paper also examines provincial differences and compares Canada with other countries.

Full-time hours declined, part-time hours increased

Between 1997 and 2006, hours worked by full-time workers declined, from 41.5 hours to 40.8, having remained stable at around 42 hours between 1976 and 1996 (Chart A). This decline in the last 10 years occurred even as full-time employment increased—its share climbing from 80.9% in 1997 to 82.0% in 2006. At the same time, average hours for part-time workers increased, from 16.5 hours in 1997 to 17.2 hours 2006.

Moving away from polarization of hours

Looking at the hours distribution provides further insight. Although a majority work 35 to 40 hours per week (59% in 2006), shifts have occurred.

Increases occurred as more worked 30 to 48 hours in the last 10 years—72.8% of all workers reported working within this band of hours in 2006 compared with 69.6% in 1997 (Chart B). On the other hand, fewer worked at the extremes—under 15 hours and 49 or more.

This is a shift away from the polarization of the 1980s to mid-1990s—when an increasing proportion of people were working shorter (less than 30) and longer hours (49 or more) (Sunter and Morissette 1994).

Average hours for part-time workers are increasing because fewer are working under 15 hours per week. On the other hand, full-time hours

Chart B   More working 30 to 40 hours and fewer at the extremes
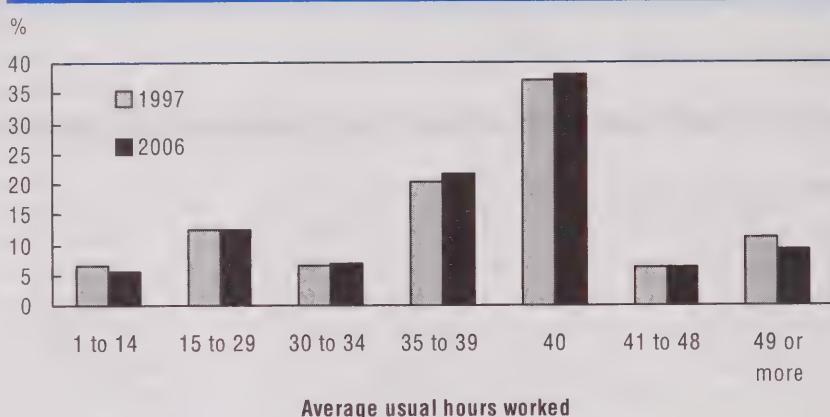
Source: Statistics Canada, Labour Force Survey.

are decreasing because fewer people are working 49 hours or more. The fastest growing proportion is in the middle range of 30 to 40 hours per week.

Women, men, youth, core-age and older workers have all moved away from working shorter and longer hours. This is despite major work-hour differences between these groups. Women and youth tend to work short to standard hours, whereas men work standard to longer hours (35 hours or more). Schedules for older workers are much more dispersed.

Women increasing hours

Not only are women more likely now to be employed, they have also increased their work hours (Table 1). In 2006, women worked an average of 33.1 hours per week, an increase of 0.6 hours since 1997. Over the period, women showed a large shift from short- or part-time hours (less than 30) toward 30 to 40 hours.

Since 1997, a larger share of the increase in employment went to women (54.8%) than to men, and the vast majority was full-time (87.1%). Only from 1976 to 1981, an era when full time was the norm, was a larger proportion of women working full time than now. In 2006, 73.9% of women were working 30 hours or more, compared with 70.7% in 1997.

Mothers influencing hours shift

One in three women aged 15 to 54 (35.3%) were mothers of children under 16 years of age in 2006. These mothers played a large role in the growth of both employment and hours worked in the past decade. Mothers of young children are becoming more attached to the labour market, as more of them are highly educated and start their careers before having children. Over the last 30 years, mothers have seen their employment rate almost double, from 39.1% in 1976 to 72.9% in 2006.

Table 1 Employment distribution by usual hours

	Both sexes		Men		Women	
	1997	2006	1997	2006	1997	2006
	%					
All ages						
1 to 14 hours	6.6	5.5	4.0	3.6	9.6	7.6
15 to 29 hours	12.5	12.5	6.5	7.2	19.7	18.5
30 to 34 hours	6.4	7.0	4.1	4.4	9.1	9.8
35 to 39 hours	20.2	21.5	14.5	16.0	27.0	27.7
40 hours	36.9	37.9	45.6	46.1	26.5	28.8
41 to 48 hours	6.2	6.4	8.6	8.9	3.3	3.5
49 hours or more	11.3	9.2	16.7	13.8	4.8	4.0
Average hours	36.7	36.5	40.2	39.6	32.5	33.1
15 to 24						
1 to 14 hours	21.1	17.5	17.4	14.4	25.2	20.5
15 to 29 hours	24.3	26.6	20.3	22.2	28.8	31.0
30 to 34 hours	7.7	8.0	6.2	6.9	9.2	9.2
35 to 39 hours	10.6	11.7	8.7	9.9	12.6	13.6
40 hours	27.6	28.8	34.3	35.4	20.2	22.1
41 to 48 hours	4.3	4.0	6.1	5.7	2.4	2.2
49 hours or more	4.4	3.5	7.0	5.5	1.6	1.4
Average hours	28.3	28.8	31.0	31.3	25.2	26.3
25 to 54						
1 to 14 hours	3.5	2.6	1.3	1.1	6.0	4.2
15 to 29 hours	10.0	9.0	3.5	3.5	17.6	15.2
30 to 34 hours	6.0	6.5	3.4	3.5	9.1	9.9
35 to 39 hours	22.6	23.9	16.0	17.5	30.4	31.1
40 hours	39.2	41.1	48.6	49.9	28.2	31.4
41 to 48 hours	6.6	7.0	9.3	9.7	3.5	3.9
49 hours or more	12.1	9.8	17.9	14.8	5.2	4.3
Average hours	38.3	38.3	42.0	41.4	34.0	34.9
55 and over						
1 to 14 hours	8.5	7.2	5.1	4.9	14.0	10.3
15 to 29 hours	14.0	14.7	9.2	9.8	21.9	21.2
30 to 34 hours	7.3	7.9	6.1	6.2	9.3	10.2
35 to 39 hours	15.6	20.0	11.9	14.8	21.8	26.9
40 hours	33.5	32.0	40.1	38.7	22.8	23.0
41 to 48 hours	5.5	6.0	7.1	8.3	3.0	3.0
49 hours or more	15.5	12.2	20.5	17.3	7.2	5.4
Average hours	36.8	36.3	40.2	39.3	31.4	32.3

Source: Statistics Canada, Labour Force Survey.

73.5% in 2002 to 76.5% in 2006. Eight in 10 mothers who received benefits returned or planned to return to their jobs within two years and the average duration of time away was 12 months in 2006.

Over the last 10 years, the proportion of mothers working part time dropped as more worked 30 to 40 hours per week. In 2006, 68.5% of mothers with children under 16 at home worked between 30 and 40 hours versus 62.1% in 1997. Mothers with children under 6 increased their usual hours at work by 1.6, to 33.2, while mothers with children 6 to 15 increased their hours by 1.2, to 33.9 (Chart C). Both groups of mothers are approaching the average hours worked of mothers without dependent children at home. During the same period, hours changed minimally for mothers without dependent children at home (34.4 in 2006).

While hours increased for mothers with children under 16 at home, their employment was up only 8.7% in the 10 years. It was women without children under 16 at home who experienced the largest employment gains, close to 30%. They also increased their hours in the middle range, as 69.8% of women without young children at home worked 30 to 40 hours in 2006 compared with 67.2% in 1997.

Men are cutting back hours

As mentioned, men's weekly work hours differ greatly from women's. Men are more likely to work standard to long hours and fewer work part time. Hours worked by men in the last 10 years shifted from the extreme short and long hours toward the 15 to 48 range.

The extension of maternity and parental benefits from the Employment Insurance program in 2000 also encouraged more mothers to stay in the labour market (Zhang 2007). Benefits from this program allow them to care for their infants longer (up to 12 months) and to return to their jobs (labour codes protect jobs of employees taking paid or unpaid maternity or parental leave). Based on the most recent Employment Insurance Coverage Survey, the proportion of mothers with insurable incomes increased, from

Chart C   Mothers with young children working longer hours

Average usual hours worked
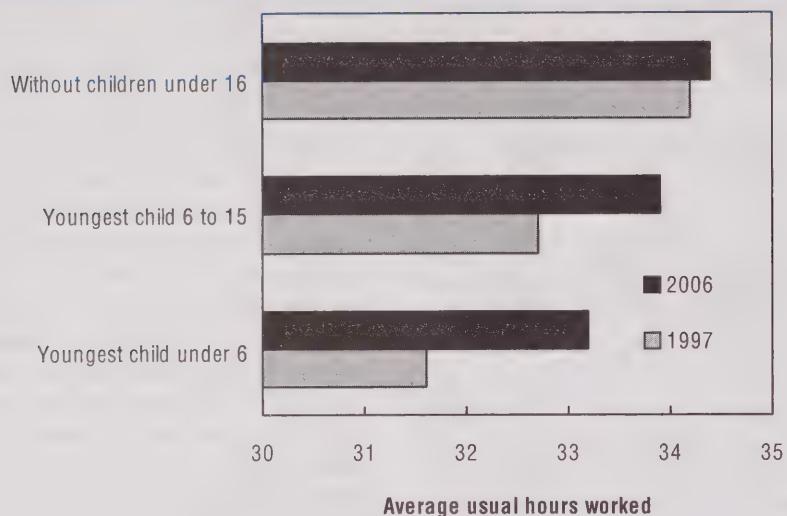
Source: Statistics Canada, Labour Force Survey.

The decline in the proportion of men working very long hours (49 or more) was much more significant than the decline in short hours (less than 15), especially for men aged 25 to 54 and those 55 or older. In 1997, 16.7% of men of all ages worked 49 hours or more compared with 13.8% in 2006, while the proportion working under 15 hours was virtually unchanged. Unlike women, who experienced an increase in their average usual hours, men saw a decline in their workweek, as fewer men worked very long hours.

Core-age, older workers, youth also influenced trend

In 2006, a larger share of core-age workers (aged 25 to 54) worked 30 to 48 hours (78.6%) than 10 years earlier (74.4%). This shift toward the middle ranges resulted from fewer women working part time and fewer men working

49 hours or more. This led to an increase in the average workweek for core-age women and a decline for core-age men, leaving the overall usual hours in 2006 unchanged since 1997, at 38.3.

Compared with core-age workers, older workers have schedules that vary much more. In 2006, older

workers were more likely to work part time than core-age workers (21.9% versus 11.6%), and were more likely to have longer workweeks—18.2% worked 41 hours or more, compared with 16.8% of those aged 25 to 54.

Among both men and women and all age groups, workers aged 55 and over had the largest shift away from very long hours (49 or more) and the largest growth in working between 15 and 39 hours in 2006. As a result, the standard workweek for older workers declined by 0.5 hours to 36.3 in 2006.

Interestingly, the increase in working 15 to 29 hours by older workers was for men only. While a larger proportion of older men worked 15 to 29 hours in 2006, fewer worked a 40-hour schedule (or 49 hours or more). This might indicate that older men are phasing into retirement as more of them cut back their hours or take on part-time hours after their career jobs are finished. In 2006, almost three in four men aged 55 and over worked part time out of personal preference compared with one in four men 25 to 54 (Marshall and Ferrao 2007).

Chart D   More self-employed work longer hours, but the proportion is decreasing

%

Chart D bar chart with axis 0 to 100, legend 1997 (light), 2006 (dark).

Categories: Public employees (1 to 29 hours, 30 to 40 hours, 41 or more hours), Private employees (1 to 29 hours, 30 to 40 hours, 41 or more hours), Self-employed (1 to 29 hours, 30 to 40 hours, 41 or more hours)
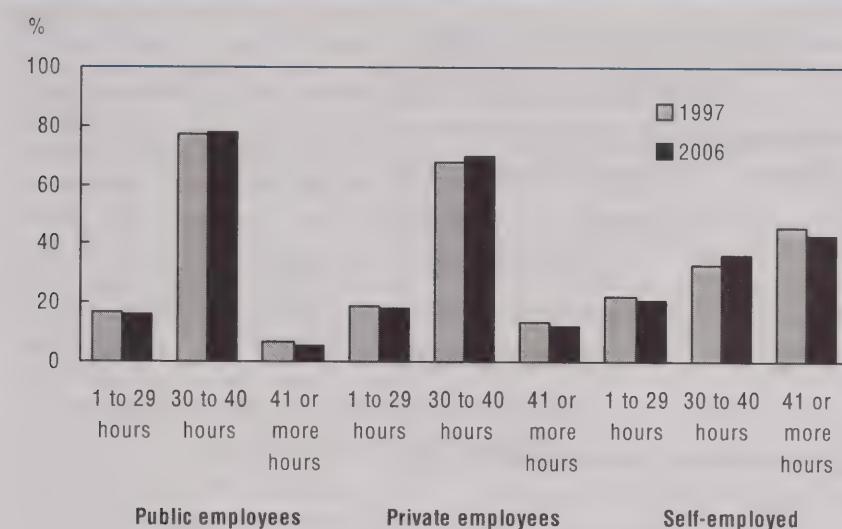
Source: Statistics Canada, Labour Force Survey.

In 2006, full-time students represented 40% of employed youth (up from 38% in 1997). They increased their hours worked by 1.7 from 1997, to an average of 15.2, as a greater proportion worked between 15 and 29 hours in 2006. Non-student youth increased their work week by 0.5 hours in 2006, as a larger proportion worked 35 to 40 hours.[1]

Even the self-employed working shorter hours

Work hours of the self-employed differ greatly from those of employees (Chart D). In 2006, business owners were four times more likely to work long hours (41 or more) than employees in private firms or public institutions (42.9% versus 10.7%). Fewer of the self-employed worked between 30 and 40 hours (36.5% versus 71.7%).

Although all age groups influenced the trend toward 30 to 48 hours, older workers may have had a larger influence than core-age workers or youth. Their employment growth during this period was far greater—their share of employment increased from 10% in 1997 to 14% in 2006, while the share of core-age workers declined (from 75% to 70%) and the share of young workers remained at 15%.

The vast majority of those 15 to 24 usually worked 40 hours or less a week in 2006 (92.5%). Their workweek averaged 28.8 hours in 2006, up 0.5 from 1997. This average is strongly influenced by two main groups: full-time students, who tend to work part time; and non-student youth, whose hours vary but most of whom work between 30 and 40 hours.

Chart E   Most of the shift in hours occurred in the service sector, which accounts for 3 in 4 workers

%

Chart E bar chart with axis 0 to 80, legend 1997 (light), 2006 (dark).

Categories: Goods sector (1 to 29 hours, 30 to 40 hours, 41 or more hours), Service sector (1 to 29 hours, 30 to 40 hours, 41 or more hours)
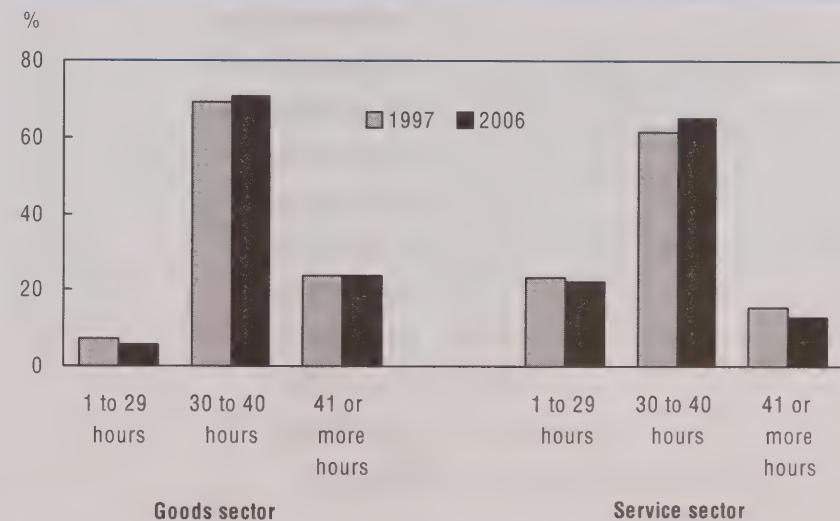
Source: Statistics Canada, Labour Force Survey.

Despite these differences, a larger proportion of the self-employed moved from short and, particularly, long workweeks to 30 to 40 hours over the past decade.

The self-employed are, however, less prominent today: in 1997, they represented 17.1% of the employed, but by 2006 their share had declined to 15.2%. Although more business owners moved toward 30 to 40 hours, private-sector employees likely had a larger impact on the overall work week average, since they were the only group to see an increase in employment numbers and they made up the largest component of employment. In 2006, 65.4% of the employed worked for private firms compared with 63.5% in 1997.

Service sector major influence

The shift toward service-related jobs in the last 10 years also had a large impact on average hours. The service-producing sector accounted for 76% of employment in 2006, and 85% of all new jobs since 1997. Workers in this sector tend to work short or standard hours, whereas those in the goods-producing sector tend to work standard to long hours (Chart E).

Of the 11 major industries in the service sector, only two did not follow the general trend toward an increased proportion of workers in the 30 to 40 range at the expense of short and long hours. Workers in transportation and warehousing had growth in long hours only (41 or more) while those in information, culture and recreational services had growth only in short hours (less than 30).

In the goods-producing sector, more workers in agriculture and construction reported working 30 to 48 hours, while in manufacturing all of the growth was in the 30 to 40 range. Forestry, fishing, mining, oil and gas extraction, and utilities showed an increase in long hours only (41 or more) (Chart F).

These industry changes are mirrored by occupations, as most service-related occupations had growth in the proportion working 30 to 40 hours. Trades, transport and equipment operators, and occupations unique to primary industry had growth in those putting in 30 to 48 hours, while processing, manufacturing and utilities had longer hours in 2006 than 10 years earlier, with a growth in schedules exceeding 40 hours (Chart G).

In the ten-year period, close to 80% of all employment growth was in white-collar occupations: natural and applied sciences; health; social science, education, government service, and religion; art, culture, recreation and sport; sales and service; and business, finance and administrative services

Chart F   Goods-producing industries have longest work weeks

Source: Statistics Canada, Labour Force Survey.

Chart G   Blue-collar workers and managers have the longest work weeks
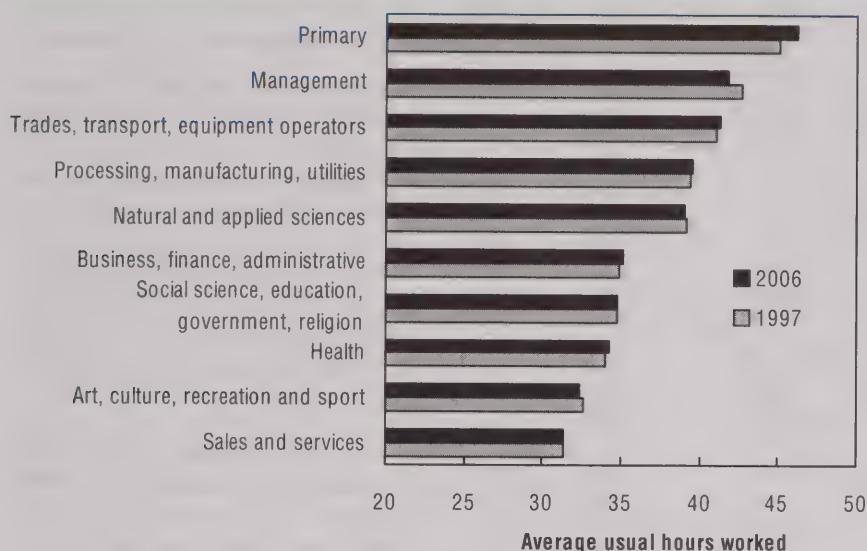
Source: Statistics Canada, Labour Force Survey.

ary accreditation usually worked 30 to 40 hours per week compared with 66.7% of workers without postsecondary education.

From 1997 to 2006, the proportion of those with postsecondary education working long hours (41 or more) declined sharply, particularly for men with a university degree. Whereas 27.1% of men with a university degree worked 41 hours or more in 1997, only 21.5% did so in 2006. In fact, men without postsecondary education were more likely to be working 41 hours or more (28.1%) than men with a university degree in 2006. This decline in long hours for men with a university education brought their average usual hours down by 1.3 to 39.8 in 2006, a much larger decline than for men in the other

(Chart H). These occupations all saw large growth in 30 to 40 hours. On the other hand, blue-collar occupations (those in primary industries; processing, manufacturing and utilities; and trades, transport, and equipment operators) and management, which tend to have longer hours, experienced below average employment growth.

Education matters

Not only are those with post-secondary accreditation more likely to be employed, they are also more likely to be working standard rather than long hours (Table 2). Between 1997 and 2006, most of the employment growth among adult workers (aged 25 and over) was among those with a college diploma, trade certificate or university degree. In 2006, 71.4% of those aged 25 and over with postsecond-

Chart H   Greater growth in white-collar jobs (except managers), where hours are more flexible and varied
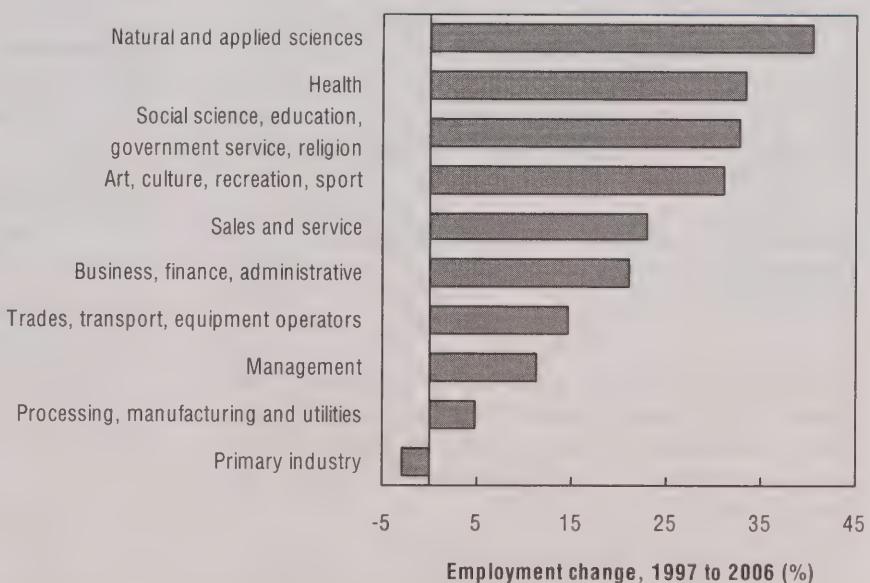
Source: Statistics Canada, Labour Force Survey.

Table 2 Distribution of usual hours worked by education (age 25 and over)

	1-29	30-40	41 or more	Average
1997		%		hours
Less than postsecondary	15.1	65.1	19.8	38.4
Men	6.3	64.9	28.8	42.1
Women	26.1	65.3	8.6	33.6
Postsecondary certificate or diploma	14.4	68.5	17.1	37.8
Men	5.0	69.6	25.3	41.6
Women	25.2	67.1	7.6	33.5
University degree	13.4	66.4	20.1	38.3
Men	7.1	65.8	27.1	41.1
Women	21.3	67.2	11.5	34.8
2006				
Less than postsecondary	13.9	66.7	19.4	38.5
Men	6.4	65.5	28.1	41.8
Women	23.2	68.2	8.6	34.3
Postsecondary certificate or diploma	13.0	71.3	15.7	37.8
Men	5.5	71.1	23.4	41.0
Women	21.1	71.5	7.4	34.3
University degree	13.1	71.5	15.4	37.5
Men	7.7	70.7	21.5	39.8
Women	18.8	72.3	8.9	34.9

Source: Statistics Canada, Labour Force Survey.

between 1997 and 2006. Compared with 10 years earlier, more people were working 40 to 48 hours per week in Alberta, while fewer worked less than 30 or 49 hours or more.

Quebec stood out with the largest hours increase in the 15 to 40 range, while fewer worked long hours. This province had the largest proportion of people working 15 to 40 hours per week, 84.4% in 2006 versus the Canadian average of 78.9%. Average usual hours were the lowest at 35.5 hours per week, and showed the largest decline (-0.8 hours) from 1997 to 2006.

Many reasons have been cited for Quebec's shorter workweek compared with other provinces: a preference for shorter schedules; the public-sector norm of a 35-hour work week (versus 37.5 in other provinces); and the high two educational groups.

While education seems to influence hours worked by men, the standard workweek for women varies minimally by education. In 2006, women with less than postsecondary certification and women with a post-secondary diploma worked an average of 34.3 hours per week while women with a university degree worked 34.9 hours.

Quebec has shortest average workweek

Newfoundland and Labrador was the only province to buck the trend away from growth in workweeks of 30 to 40 hours, with an increase in the share of people working 41 or more hours (Chart I). The growth in long hours started in 2003, and by 2006, Newfoundland and Labrador had the highest average usual hours worked at 38.9, an increase of almost one hour since 1997.

Alberta also had an increase in its average usual hours worked—to 38.3 per week in 2006—prompted by the highest employment growth rate of all provinces

Chart I Only three provinces had increases in usual hours worked
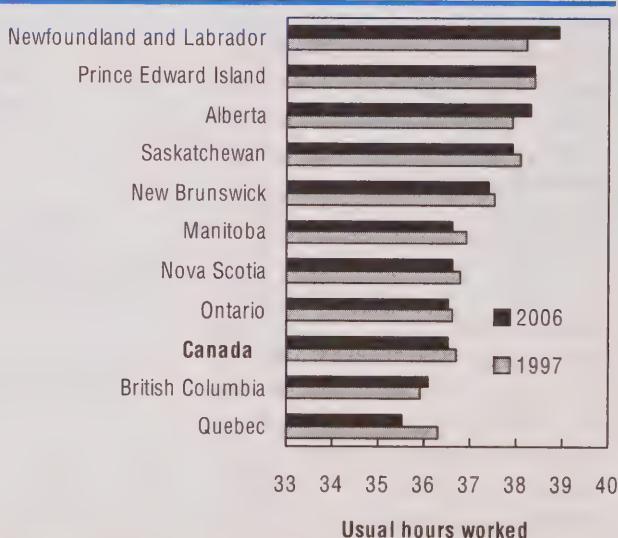
Source: Statistics Canada, Labour Force Survey.

unionization rate, which may also affect work hours among the non-unionized . Quebec also has a larger share of workers with a short-year, full-time schedule (Heisz and LaRochelle-Côté 2007).

International comparisons

Trends in Canada's usual hours worked were quite similar to those in other countries (Table 3). Of the 16 countries listed, 14 had declines in average usual hours of work between 1997 and 2006, with more consistent declines occurring for men.

At 36.5, Canada's average usual hours rank in the middle, although in many countries, men's average workweek is longer than in Canada. For women, their average workweek ranked as the 6th highest. This high ranking in hours matches Canada's high rate of employment for women. Among OECD countries, Canadian women ranked 5th in their rate of employment, as 69.0% of women aged 15 to 64 were employed in 2006. Only Denmark (73.2%), Norway (72.3%), Sweden (72.1%) and Switzerland (71.1%) had higher rates.

The Nordic countries (Denmark, Norway, Sweden, Finland and Iceland) all have high rates of labour market participation among mothers. These countries offer generous maternal and parental leave benefits and subsidized childcare services for preschool children— services that have been proven to encourage women's ongoing participation in the labour market.

When looking at the more detailed hour categories (available only for selected countries), most OECD countries (11 of 14), like Canada, had declines in the proportion of people working long hours (50 or more) (Chart J).

Results were mixed in 30 to 40 hours worked, as almost half of the countries had increases while the others had declines.

Canada experienced a decline in the part-time rate (less than 30 hours) from 1997 to 2006, a trend also observed in only four other countries: France, the United States, New Zealand and Sweden (Table 4). Despite the decline, Canada's part-time rate remained close to the combined rate of the G7 countries, the OECD average and Europe.

The Canadian part-time rate fell for women while increasing marginally for men. Seven other countries

Chart J   Most OECD countries saw a decline in the proportion working 50 or more hours a week

Change, 1997 to 2006 (% point)

Note: Data for Australia are for 1998 instead of 1997; Norway and Japan, 2002 instead of 1997; and Japan is for 49 hours or more.
Source: Organisation for Economic Co-operation and Development (OECD).

had declines in women's part-time rates, with similar decreases in Sweden, Norway, France, New Zealand, and the United Kingdom. At 26.2% in 2006, the part-time rate for Canadian women was among the lowest, whereas for men it was among the highest—at 10.9%, almost double the European average of 6.5%.

Table 3 Average usual weekly hours at main job, selected countries

	Men			Women	
	1997	2006		1997	2006
		Hours			
Australia	42.3	41.1		30.9	30.9
Belgium	40.6	40.5		33.3	32.3
Canada	40.2	39.6		32.5	33.1
Denmark	37.7	38.5		32.4	31.9
Finland	40.8	39.8		36.7	35.7
France	41.1	41.2		34.3	34.3
Germany	41.2	40.0		32.7	30.2
Ireland	44.3	40.3		34.1	31.6
Italy	41.4	41.8		35.7	33.9
Luxembourg	41.0	40.1		34.7	33.6
Netherlands	38.0	36.1		25.5	24.3
New Zealand	43.7	42.6		32.0	32.4
Norway	39.0	36.9		31.4	30.1
Sweden	39.6	38.8		33.6	33.9
Switzerland	42.1	40.7		29.7	28.5
United Kingdom	44.1	41.8		30.9	31.3

Note: Switzerland uses 2005 instead of 2006.
Source: Organisation for Economic Co-operation and Development (OECD).

Table 4 Part-time employment rate in selected countries

	Men			Women	
	1997	2006		1997	2006
			%		
OECD countries	**7.6**	**8.1**		**25.7**	**26.4**
Europe	**5.4**	**6.5**		**26.3**	**28.7**
G-7 countries	**8.5**	**8.7**		**27.6**	**27.8**
Australia	14.6	16.0		41.0	40.7
Belgium	4.4	6.7		30.5	34.7
Canada	10.5	10.9		29.4	26.2
Denmark	11.1	11.4		24.5	25.6
France	5.9	5.1		25.8	22.9
Germany	4.1	7.6		31.4	39.2
Ireland	6.9	7.7		27.6	34.9
Italy	5.1	5.3		22.2	29.4
Japan	12.9	12.8		38.3	40.9
Netherlands	11.1	15.8		54.9	59.7
New Zealand	10.4	10.1		37.0	34.5
Norway	7.7	10.6		36.5	32.9
Sweden	6.5	8.4		22.6	19.0
Switzerland	7.1	8.8		45.7	45.7
United Kingdom	8.2	9.9		41.0	38.8
United States	8.2	7.8		19.4	17.8

Source: Organisation for Economic Co-operation and Development (OECD).

Summary

Usual hours of work declined even as more full-time workers came into the labour market between 1997 and 2006. Average usual hours fell because more people were working 30 to 48 hours (especially 30 to 40 hours), as the drop in very long hours (49 or more) more than offset the decline in short hours (under 15).

Women, with a stronger presence in the labour market now than ever before, increased their hours. More moved from part-time hours to 30 to 40 hours. Men's hours, however, declined, as fewer worked very long hours.

Canada's strong labour market in the last 10 years also influenced hours worked. It attracted more women, mothers with dependent children, youth and older workers into the labour force—groups that generally prefer varied hours.

A number of factors influenced the decline in the category over 49 hours: more jobs in the services sector (where hours are more varied and flexible); and less prominence for groups that tend to work long hours

(e.g. the self-employed, workers in the goods-producing sector, and managers and blue-collar workers). Those with postsecondary education were also less likely to be working long schedules than 10 years earlier. Work-life balance may also play a part in this—as more women, and particularly mothers, join the labour market, it becomes more important to balance work and personal life. The trend toward fewer people working long hours per week is also occurring in many other countries.

Perspectives

■ Notes

1. Student and non-student hours and employment are based on 8-month averages (January to April and September to December).

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Retiring together, or not

Grant Schellenberg and Yuri Ostrovsky

Retirement continues to change in many ways. This is certainly evident in terms of its timing, given the declining rate of labour force participation among older men between the 1970s and mid-1990s and its reversal in more recent years (Marshall and Ferrao 2007). Likewise, the process appears to be changing, given phenomena such as post-retirement employment (Schellenberg et al. 2006), phased retirement and diverse pathways into retirement (Nouroz and Stone 2006). Retirement is also changing in the extent to which it is being navigated by dual-earner couples.

Throughout much of the 20th century, older couples faced only one retirement decision—the husband's. Women who had paid employment during their life typically left the workforce at an early age to care for children and work on an unpaid basis in the home. However, with the dramatic rise and sustained participation of women in the paid labour force since the 1970s, retirement transitions of married couples have been transformed. Increasingly, couples must make two decisions rather than just one and must balance the preferences and constraints of partners who both make substantial contributions to household income.

This has added new complexities to retirement decisions. Researchers generally agree that couples prefer to retire together, in large part because retirement is more enjoyable when it can be shared with a spouse (Gustman and Steinmeier 2004, An et al. 2004, Moen et al. 2001, Szinovacz and Davey 2005). However, the opportunity to retire 'jointly' may be constrained by factors such as age differences, health conditions, pension eligibility, job loss and career aspirations.

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To date, evidence on spousal retirement transitions in Canada has been sparse. In the mid-1990s, about one-third of couples retired within one year of each other (Gower 1998). More recently, about half of couples approaching retirement intended to retire at the same time (Schellenberg et al. 2006). However, trends in the actual retirement outcomes of spouses have yet to be documented.

This article addresses several questions regarding retirements in dual-earner couples: the extent to which these spouses synchronize the timing of their retirements; the factors associated with taking one or another spousal pathway into retirement; and changes in spousal patterns of retirement through the 1990s (see *Data sources and definitions*).

With more wives employed, retirement becomes more complex

Most Canadians approaching retirement are married, which has changed little over the last 30 years. Between 1976 and 2006, the proportion of women aged 55 to 64 who were married or in a common-law relationship remained just over 70% (Table 1), while men in such relationships remained over 80%.[3] The most noticeable changes in marital status have been the

Table 1 Marital status of persons aged 55 to 64

	1976	1986	1996	2006
Men		%		
Married/common-law	85.8	83.9	83.3	80.0
Separated/divorced	3.7	5.5	8.2	10.6
Widowed	3.3	3.4	2.5	1.9
Never married	7.2	7.2	6.0	7.5
Women				
Married/common-law	70.8	71.3	72.1	71.6
Separated/divorced	4.7	7.5	10.9	14.3
Widowed	16.9	15.6	12.3	7.9
Never married	7.5	5.6	4.7	6.2

Source: Statistics Canada, Labour Force Survey.

Data sources and definitions

This study uses a 20% version of the **Longitudinal Administrative Database** (LAD), which is derived from taxation data. LAD files provide detailed information about both individual and family income for those who filed income tax forms between 1982 and 2005. The 20% sample is randomly selected from all tax-filing Canadians and, once selected, individuals remain in the sample for as long as they appear on the annual T1 Family File (T1FF). Census families are formed from the personal data that filers provide on other family members. Filers are attached to their spouses (legal or common-law) by social insurance number or by matching age, sex, address and marital status. Baseline labour force information comes from the monthly **Labour Force Survey**, which covers the civilian, non-institutionalized population in the 10 provinces.

Dual-earner couples approaching retirement are defined by identifying those with a husband 55 to 69 years of age. The sample is limited to couples in which both partners derive their earnings primarily from paid employment rather than self-employment and have average annual earnings of $2,000 or more over at least three consecutive years prior to the retirement of one or both.[1]

Retirement can be defined in various ways, depending in part on the information available (Bowlby 2007). While the LAD provides a great deal of income detail, it contains limited information on demographic and labour market characteristics. Consequently, retired individuals are identified on the basis of changes in their income characteristics over time—more specifically, when their annual earnings decline to less than 10% of their average during the three previous years *and* remain below that level over the next five years. For example, an individual with annual earnings of $75,000 over three years would be identified as retired if annual earnings dropped below $7,500 and subsequently remained below that amount. The definition allows for the possibility that retirees might maintain some involvement in paid employment and also recognizes that some people might 'come out of' retirement.[2]

Using these criteria, the retirement patterns of dual-earner couples in which at least one spouse retired in 1986, 1991, 1996 or 2001 were identified. For the 2001 retiring cohort, for example, both spouses had earnings of $2,000 or more in 1998, 1999 and 2000 (i.e. they were a dual-earner couple) and in 2001 the earnings of at least one spouse fell below the 10% threshold. Retirees whose spouse's earnings fell below the 10% threshold in 2001 or later were also identified.

increase in separated or divorced and the decline in widowed. For individuals approaching retirement without a spouse, this is usually the case due to divorce or separation rather than widowhood or never having married. (The retirement characteristics of these individuals are outside the scope of this article.)

The employment histories of women in these couples have changed markedly. In 1976, almost one-half of married women aged 55 to 64 were not in the labour force after age 40 (Table 2). Over one-quarter (27%) had never worked in a paid job and another 19% had last worked before 40. Given their limited involvement in the paid labour force, these women did not retire in the usual sense nor was their paid employment a consideration in their husband's retirement decision.

In 2006 the situation was very different. Less than 4% of married women aged 55 to 64 had never worked and only 10% had last held a paid job before age 40. Instead, the vast majority (77%) were either currently employed (48%) or had held a paid job at age 50 or older (29%). In short, most married women now retire from paid employment and most married couples face the possibility of joint retirement.

### Table 2 Employment history of married individuals aged 55 to 64

	1976	1986	1996	2006
Men		%		
Currently employed	76.4	65.9	56.6	65.1
Not currently employed				
Last worked age 50 or older	18.5	26.9	34.4	26.4
Last worked age 40 to 49	1.6	2.2	3.7	3.8
Last worked before age 40	3.2	4.9	4.8	4.2
Never worked	0.3	0.1	0.6	0.5
Women				
Currently employed	24.9	28.2	33.2	48.0
Not currently employed				
Last worked age 50 or older	21.9	27.4	32.2	29.0
Last worked age 40 to 49	7.2	10.8	9.9	9.5
Last worked before age 40	18.7	22.3	15.6	10.0
Never worked	27.2	11.3	9.0	3.6

Source: Statistics Canada, Labour Force Survey.

Most wives retire after husbands

Among dual-earner couples in the 2001 retiring cohort, 29% of the spouses retired within two years of each other (Chart A). This includes couples in which both retired in 2001 (14%) and those in which one

Chart A   Spousal retirement transitions of the 2001 cohort varied considerably
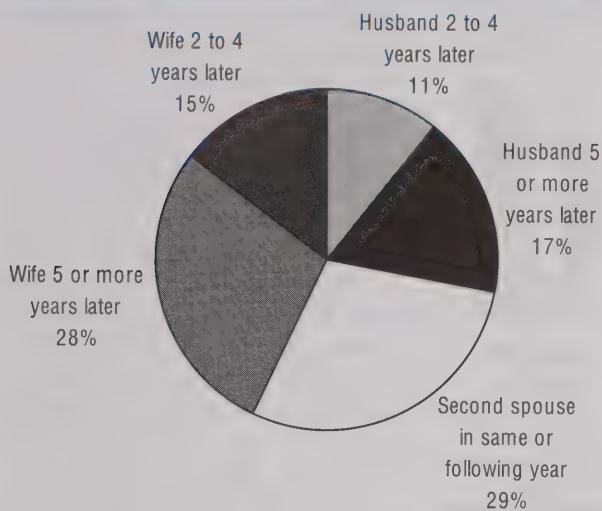
Source: Statistics Canada, Longitudinal Administrative Database.

spouse retired in 2001 and the other the following year (15%).[4] The incidence of joint retirement generally falls within a range of about 20% to 40% (Blau 1998, Hurd 1990, O'Rand and Farkas 2002, Johnson 2004, Gower 1998).[5] Furthermore, the tendency for joint retirement is supported by the clustering of retirements within a two-year period. But while a significant proportion of couples retired jointly, the most prevalent pattern was for women to retire after their husband. In 28% of retiring couples, the husband retired in 2001 and the wife had still not retired by 2005. In another 15% of couples, the wife retired two to four years after the husband. However, more than a quarter (28%) of wives retired first. This includes 11% of couples in which the wife retired in 2001 and the husband retired two to four years later, and another 17% in which the husband had not retired by 2005.

Some trends are evident (Chart B). Between 1986 and 2001, the proportion of dual-earner couples in which both partners retired within two years of each other declined by 2 percentage points. Furthermore, the proportion of wives retiring two to four years after their husband declined by just over 4 points, as did the proportion of husbands retiring two to four years after their wife. This 11-point

decline in the middle of the distribution was offset by increases at the ends. Between 1986 and 2001, the proportion of wives retiring five or more years after their husband increased by 7 points, while the proportion of husbands retiring five or more years after their wife increased by 4 percentage points. The same patterns were evident for the 1991 or 1996 retiring cohorts. Overall, this suggests that spousal retirement is becoming more disjointed.

Many factors influence spousal retirement

The probability of following one or another of these pathways into retirement is likely influenced by many factors, including age differences between spouses. To assess the relative importance of various factors, a multivariate model was constructed. The 1991, 1996 and 2001 retiring cohorts were pooled and a set of characteristics was introduced to determine their relationship to the likelihood of retiring in one way or another. The marginal effects of these characteristics show how much the predicted probability of taking a given spousal pathway into retirement changes when a specific characteristic is changed by a small amount (Table 3). For example, the model yields a predicted probability of joint retirement of 35.1% (that is, spouses retiring within two years of each other). A one-year increase over the average age of husbands increases the probability by 3.2 percentage points, with other characteristics remaining constant. (Pension contributions prior to retiring—an important variable—were not available for the 1986 cohort, so multivariate analysis was restricted to the 1991, 1996 and 2001 cohorts.)

The first three variables were the age of the husband, the age difference between the spouses, and whether the couple was legally married or in a common-law relationship.

The likelihood of spouses retiring jointly is greater among older than younger couples. A one-year increase in the age of the husband decreases the likelihood that either spouse retires five or more years after the other by about 2 percentage points, and increases the likelihood of joint retirement by 3.2 points. Perhaps not surprisingly, if a husband in a dual-earner couple is 65, his or his wife's retirement is likely to be accompanied (or closely followed) by the other's retirement. In contrast, if the husband is 55, his or his wife's retirement is less likely to be accompanied by the other's retirement. The other spouse is more likely to continue working.

Chart B Spousal retirements becoming more disjointed

Source: Statistics Canada, Longitudinal Administrative Database.

(Morissette and Ostrovsky 2008). Interestingly, while a husband's receipt of EI benefits decreased the likelihood of joint retirement, a wife's receipt of EI benefits increased the likelihood. It is not clear why this is the case.

Financial characteristics were also important. Average earnings of husbands and wives prior to retirement were correlated with spousal retirement transitions. Specifically, compared with those earning less than $15,000, husbands and wives earning $45,000 or more were significantly less likely to continue working five or more years after their spouse's retirement (decreases in predicted probabilities of 4.9 and 3.7 percentage points respectively). Conversely, husbands and wives with incomes of $45,000 or more were significantly more likely to retire jointly, with the predicted probability increasing by 5.7 and 4.4 points respectively.[7] This is consistent with other studies (O'Rand and Farkas 2002) that found higher-income couples more likely to retire together.

The wife's contribution to a couple's total earnings prior to retirement was correlated with spousal retirement patterns. Specifically, a one percentage point increase in the wife's contribution to pre-retirement earnings was associated with a 0.2-point increase in the predicted probability that she would retire five or more years after her husband. One might speculate that wives who contribute a larger share of income shoulder greater responsibility for the financial well-being of the household and hence have greater incentive to continue working. However, the LAD does not provide information to test this hypothesis.

The age difference between spouses also matters. A one-year increase in the age difference reduces the predicted probability of joint retirement by 2.1 percentage points and increases the probability of a wife retiring five or more years after her husband by 3.7 points. In short, a wife who is much younger than her husband is more likely to continue working after he retires than a wife who is about the same age as or older than her husband. The retirement patterns of couples in common-law relationships were not significantly different from those legally married.

Events en route to retirement may also influence spousal transitions. The loss of a job, for example, may force one spouse into retirement prematurely and reduce the prospects for joint retirement. Exposure to job loss was included in the model using a yes/no variable indicating if either spouse had received Employment Insurance

(EI) benefits in the year prior to retirement.[6] The receipt of EI benefits was significantly associated with spousal retirement patterns. Husbands and wives receiving such benefits were far more likely to retire before their spouse than those who did not receive them. For example, the predicted probability of a wife retiring five or more years after her husband increased by 11.1 percentage points if he received EI benefits prior to retiring. Likewise, the predicted probability of a husband retiring five or more years after his wife increased by 8.1 points if she received EI benefits prior to retiring. One interpretation is that when one spouse enters retirement via unemployment, the other continues working to shore up their financial resources. Indeed, in families with no working-age children, the earnings of wives increased following the layoff of their husband, offsetting approximately 22% of the husbands' earnings losses

Table 3 Change in predicted probability of spousal retirement transitions

	Wife first			Husband first	
	Husband 5 or more years later	Husband 2 to 4 years later	Both spouses within 2 years	Wife 2 to 4 years later	Wife 5 or more years later
			%		
Predicted probability of outcome	**12.1**	**12.7**	**35.1**	**17.4**	**22.7**
Change associated with variation in:					
Husband's age	-2.1	0[s]	3.2	0.7	-1.8
Age difference between spouses	-0.9	-1.2	-2.1	0.5	3.7
Common-law status[1]	0[s]	0[s]	0[s]	0[s]	0[s]
Husband with Employment Insurance[2]	-6.8	-7.2	-5.3	8.3	11.1
Wife with Employment Insurance[2]	8.1	9.6	6.5	-9.0	-15.3
Husband's earnings					
$15,000 to $44,999[3]	0[s]	0[s]	0[s]	0[s]	0[s]
$45,000 or more[3]	-4.9	0[s]	5.7	0[s]	0[s]
Wife's earnings					
$15,000 to $44,999[3]	0[s]	0[s]	0[s]	0[s]	0[s]
$45,000 or more[3]	0[s]	0[s]	4.4	0[s]	-3.7
Wife's share of earnings	-0.2	-0.1	0[s]	0[s]	0.2
Husband contributed to pension[4]	-5.5	0[s]	0[s]	3.6	0[s]
Wife contributed to pension[4]	-2.9	-2.4	-2.1	5.9	1.6
1996[5]	1.5	1.3	0[s]	0[s]	0[s]
2001[5]	4.1	-2.4	-4.4	-2.6	5.3

1. Compared with legally married couples.
2. Compared with those not receiving Employment Insurance.
3. Compared with those earning less than $15,000.
4. Compared with those not contributing to a pension.
5. Compared with 1991.
Source: Statistics Canada, Longitudinal Administrative Database, 1991, 1996 and 2001.

Furthermore, whether husbands and wives in dual-earner couples made pension contributions prior to retirement was significantly correlated with retirement transitions. Specifically, compared with wives not making pension contributions, those who did so were significantly more likely to continue working after their husband's retirement and significantly less likely to retire first. For example, the predicted probability of a wife retiring two to four, or five years after her husband increased by 5.9 and 1.6 points respectively if she contributed to a pension.

Finally, the results of the multivariate model showed that, holding the characteristics discussed above constant, the predicted probability of dual-earner spouses retiring within two years of each other declined by 4.4 percentage points between 1991 and 2001, and the likelihood of retiring two to four years apart declined by about 2.5 points. In contrast, the likelihood of a wife retiring five or more years after her husband in-

creased by 5.3 points and the likelihood of a husband retiring five or more years after his wife increased by 4.1 percentage points. This trend also held during the latter half of the decade, as husbands and wives were significantly more likely to retire five or more years after their spouse in 2001 than in 1996.

Conclusion

As a result of the widespread entry and sustained participation of women in the paid labour force, many Canadians now approaching retirement are part of a dual-earner couple. As such, the timing of their retirement can be assessed not only in terms their age, but also relative to the timing of their spouse's retirement. And just as the age of retirement has changed considerably, so too has the sequencing of retirement in dual-earner couples. Overall, evidence indicates that the retirements of such couples became increasingly disjointed through the 1990s.

From a research standpoint, one implication of this study is that identifying spousal retirement patterns simply as wife first, husband first or joint may miss an important part of the bigger picture. The growing disjointedness of spousal retirement is attributable to the declining proportions of husbands and wives retiring two to four years after their spouse and the increasing proportions retiring five or more years after. This shift would be obscured using broad wife-first/husband-first categories.

With the imminent retirement of the baby boom generation, much discussion focuses on how older workers might be encouraged to stay on the job (OECD 2006), and retirement incentives and constraints imposed by public programs, pension rules and workplace policies (OECD 2005). Spousal factors are another consideration, as an increasing proportion of older workers might take the plans and preferences of their partner into account when making their own retirement decisions. Such considerations could have either a positive or negative impact on labour supply. With husbands generally two to three years older than wives, a preference to retire jointly could be realized with wives leaving the labour force a few years earlier than they would have left otherwise, or with husbands working a few additional years. However, the potential impact of spousal considerations could be mitigated by the increasingly independent manner in which spouses in dual-earner couples appear to be retiring.

Perspectives

■ Notes

1. Identifying whether self-employed individuals are retired, based on changes in their net self-employment incomes, could be problematic. For example, a self-employed individual who is actively working may report negative or zero net self-employment income resulting from business losses or expenses. Hence, a year-over-year decline in net self-employment income might not necessarily signal labour force exit. Conversely, an individual receiving net income from self-employment might no longer be actively engaged in the workforce.

2. Two additional definitions of retirement were used in the early stages of analysis. Individuals were identified as retired when their annual earnings declined to zero following at least three consecutive years of $2,000 or more. Once identified as retired, earnings were not tracked in subsequent years to determine if they became

positive again (i.e. the individual came out of retirement). Individuals were also identified as retired when annual earnings declined to less than 10% of their average during the three years prior to retirement. This definition allowed for the possibility of some limited involvement in paid employment after their initial retirement. Once individuals were identified as retired, their earnings were not tracked in subsequent years. Trends in the timing of spousal retirement based on these definitions were comparable to those in the body of the article.

3. The Labour Force Survey does not provide information on marital history so the proportion who had divorced and remarried cannot be determined.

4. The precision of the estimate of relative timing of each spouse's retirement is limited by the annual earnings data. If one spouse retires at the end of January, his or her annual earnings for the year will likely fall below the 10% threshold and that spouse will be identified as a retiree. If the other spouse retires at the end of March the same year, his or her annual earnings will not likely fall below the 10% threshold, until the following year. Consequently, the spouses will be identified as having retired in two consecutive years, when in fact the dates were only two months apart.

5. Differences within this range are attributable to factors such as different data sources, sample selection criteria, age cohorts, reference periods and definitions of retirement. Blau tracks the labour force exits of a sample of persons born between 1906 and 1911 and estimates that 30% to 40% of spouses in dual-earner couples retired within one year of each other. Hurd examines a slightly younger cohort and estimates the incidence of joint retirement at about 25%, while O'Rand and Farkas track women in their 50s and early 60s from 1989 to 1997 and estimate the incidence of joint retirement at 33% to 39%. Johnson uses 1992 to 2002 and estimates the incidence of joint retirement at 19%. In one of the few Canadian studies, Gower estimates that about one-third of dual-earner spouses leave the labour force within one year of each other.

6. Individuals actively seeking employment are counted as unemployed by the Labour Force Survey. This could include older workers who come out of retirement or who look for work after leaving a career job. Such individuals may not have applied or qualified for Employment Insurance benefits, so they would be missed by the EI benefit variable. Consequently, the EI benefit variable is likely a weak proxy for unemployment. Furthermore, EI eligibility rules were tightened in the early 1990s so the receipt of benefits may be a better proxy for job loss in 1996 and 2001 than it was in 1991.

7. Simple cross tabulations show that wives with earnings of $45,000 or more are far more likely to retire five or more years after their husband than wives in lower earnings categories. However, this bivariate correlation disappears when other characteristics, such as pension coverage and receipt of EI benefits, are taken into account.

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Work-related training

Matt Hurst

ifelong learning has become a virtual career necessity. In nearly all industries, technological change is placing an ever-higher value on skills. This often requires some kind of training, whether it be learning to run a machine processing oil sands or to use software analyzing investments.

Not all pressures to train come from the employer—employees have their own objectives and motivations to pursue job-related training. The motivation may be to keep a job, get a promotion, or land a position with another employer. It is also linked to higher income (Hum and Simpson 2001, Lynch 1997). For example, an electrical engineer may take a course in a new computer system for power consumption management to gain increased responsibilities, an improved résumé, and hopefully a promotion. Non-economic reasons such as intellectual challenge or the excitement of learning something new also come into play.

Using the Adult Education and Training Survey (AETS), this article looks at how participation in job-related courses changed from 1993 to 2002 across a number of social and demographic characteristics. In particular, the factors

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affecting employer-supported training as well as training that is not employer supported are explored. Tabulations are complemented by a multivariate analysis (see *Data source and definitions*).

More training in the new millennium

Overall, participation in job-related course training increased from 1993 to 2002. Although participation rates fell by 3 percentage points from 1993 to 1997 (from 26% to 23%), they rebounded strongly in 2002, reaching 31% (Table 1). One Canadian study looking at both course and pro-

gram training, using the AETS, found a similar trend (Xu and Lin 2007). The increase in training at the turn of the millennium was also found in American studies of work-related training courses. In the United States, rates remained about the same at 22% and 23% between 1995 and 1999 (Creighton and Hudson 2002), then jumped to 27% in 2004/2005 (O'Donnell and Chapman 2006).

Employer support makes a difference

Job-related training is fairly common. Almost one-third of workers (about 3.9 million) took

Table 1 Participation in training courses by employed Canadians

	1993	1997	2002
		%	
Participation rate			
Total[1]	26	23(*)	31(*)
Employer support	23*	21*(*)	23*
No employer support (ref)	4	3(*)	10(*)
Courses per trainee		average	
Total	1.6	1.3(*)	2.0(*)
Employer support	1.6	1.3(*)	2.0(*)
No employer support	1.4	1.3	2.2(*)
Duration of all training courses		hours	
Total	45	43	57(*)
Employer support	40*	38*	56*(*)
No employer support (ref)	80	80	73

* significantly different from the reference category (ref) [p < 0.05]
(*) significantly different from the 1993 figures (p < 0.05)
1. Columns do not add to totals because of a small group of people who took one or more employer supported courses and one or more courses not supported by the employer.
Source: Statistics Canada, Adult Education and Training Survey.

Data source and definitions

The **Adult Education and Training Survey**[1] was conducted in 1994, 1998 and 2003 as a supplement to the Labour Force Survey (LFS) and asked about education and training activities in the previous year. The analysis was restricted to employed persons aged 25 to 64, yielding samples of about 19,500 for 1993, 16,200 for 1997, and 17,400 for 2002. Employed persons are people who had a job, including working students and the self-employed, in the week preceding the LFS interview. The sample is representative of Canada's 10 provinces, excluding persons living on Indian reserves, full-time members of the Armed Forces, and people in institutions.

This article is about people who take job-related course training. Job-related courses are any learning activity given through a course, workshop, seminar or tutorial. Self-directed learning is not included. No limits were placed on course length. A course was considered job-related if it was taken for a current or future job, rather than for personal interest or other reasons.

Program and course training participation rates differed across a number of important characteristics, but resource constraints precluded an analysis of both. Course training was chosen because it is the larger contributor to the overall participation rate. For example, in 2002, 86% of participants took one or more courses. The analysis excludes programs leading to a degree, certificate or diploma from accredited high schools, registered apprenticeship and trade or vocational institutions, colleges or CEGEPs, and universities. Courses taken for hobbies or personal development are also excluded.

The 1994 and 1998 surveys covered all training activities and asked whether they were job-related, but the 2003 survey asked only about job-related training. The effect of this change on the ability to compare mean participation rates from 2002 with earlier years is not known. However, the conclusions of this study are based on regression model results, which are not sensitive to the survey change in 2002.

For 1997 and 1993, employees were asked if employers "provide the training, pay for courses or transportation, give time off, or give support in any other way." For 2002, the main question used to identify an employer-supported course was whether the employer was "providing or paying for the training, allowing a flexible work schedule, providing transportation, or any other type of support." The latter version may have prompted more respondents to say their training was employer-supported since the concept of a flexible work schedule is broader than giving time off. For this reason, the 2002 participation rate for training without employer support may be underestimated.

Logistic regression was used to estimate the relationship between training participation and personal and job characteristics. The dependent variable is binary—equal to one for those who took at least one training course and zero for those who took none. An odds ratio for a particular group may be interpreted as how many times higher (or lower, if less than 1) their odds of participation are than that of the reference group.

Samples were divided into two groups—those who took training with employer support and those who took it without. Men and women were also considered separately, creating four groups in total.

job-related courses in 2002, the majority employer supported. Employer support included providing training, paying for fees or transportation and providing flexible work schedules. Between 1993 and 2002, the participation rate for those taking employer-supported training remained steady at 23%. A study using the Workplace and Employee Survey, with a much shorter time span (1999 and 2001), had similar findings (Xu and Lin 2007). However, a small but growing group of people take courses with no employer support. The participation rate of that group more than doubled, from 4% to 10% from 1993 to 2002.

Although respondents were working at the time of the survey, some did not work in the reference year. In 1997, about 3% who had taken training without employer support had not worked that year. In 2002, this figure remained unchanged. This factor does not account for the increase in training without employer support.

The growing participation in training without employer support suggests a demand that is not being met by employers. If employers wanted employees trained, then it is likely that they would support training in some way. It appears training without employer support is solely the employee's decision. An employee may wish to self-finance training because its purpose is to obtain general skills applicable to a wide range of occupations. While general-skills training may be good for the employee, the employer may feel it increases the chances that the employee will change jobs, leading to a loss on their investment if they provide funding (Lynch 1997).

Data on training objectives, first seen in the 2003 AETS, support this notion. In 2002, 57% of people who took training with the objective of finding or changing jobs and/or starting their own businesses had employer support, compared with 82% who did not

have this objective. Similarly, 60% of employees seeking change took courses without employer support, whereas only 30% who did not have this objective took courses without support. Therefore the types of courses that help employees switch jobs, and may not be a good investment for the employer, are not given as much support. At the same time, employees appear to take this situation in stride, with only 3% of employees feeling that lack of employer support was a barrier to training.

Training with employer support

Not surprisingly, participation in employer-supported training is related to time spent at work. Full-time employees had higher odds of participation than part-timers (Table 2). For instance, in 2002, women who worked full time had twice the odds of training with employer support. For an employer, the funds invested in training pay off more for employees who work full days. Employers may also be less willing to invest in part-time employees, since these jobs are more likely to be temporary.

Type of work is also an important factor. Blue-collar workers, or those in clerical, sales and service jobs, are less likely to participate in training compared with people in professional or managerial jobs. In 2002, men and women in clerical, sales and service jobs had 0.6 times the odds of participating in employer-supported training compared with those in professional and managerial jobs. The results were very similar in 1993 and 1997.

Employees with longer tenure are more likely to undergo training than those with shorter tenure. For instance, in 2002, women with more than one year of tenure had more than twice the odds of participating in employer-supported training, after accounting for other factors. The opposite might be expected to be true, since a new job usually requires more training. One explanation for this is that employers might prefer to invest in training after the employee has shown loyalty to the firm so that their investment is not lost (Hui and Smith 2005). Another explanation is that new workers are often hired specifically for the skills they bring to the job, whereas longer-tenured workers may need refresher courses.

Employees in large organizations (more than 500 employees) are more likely than those in small ones (fewer than 20) to receive employer-supported training. This is not surprising since larger firms tend to

have more developed and better-financed human resource departments to offer training. Also, employees in large firms have more opportunities to change jobs within their organizations. This lowers the training-investment risk for larger firms (Chowhan 2005).

However, this positive firm-size effect was reduced over time. For women and men, the odds of participating in the employer-supported training were 2.7 and 5.7 times higher in 1993 in large versus small firms, respectively, compared with only 1.8 and 2.2 times in 2002. This is reflected in the convergence of participation rates between small and large firms. From 1993 to 2002, men's participation in employer-supported training in small firms rose by 4 percentage points, while in large firms it dropped 7 points (Table 3). This latter drop is noteworthy since 38% of employed men worked in large firms in 1993, compared with 52% in 2002.

This growing alignment in participation rates for small and large firms might be a result of smaller firms conducting more computer-training courses and larger firms conducting fewer. Larger firms were early to introduce computers as productivity tools for employees. With computers new to the workplace, employees needed training to use them. However, no change was seen in the participation rates for courses taken in data processing and computer science technologies from 1993 to 2002, regardless of firm size.

Since the public sector has always been a staunch supporter of training, it is not surprising that its employees have a training advantage over their private-sector counterparts.[2]

For 1993 and 1997, not engaging in collective bargaining reduced the odds of participation in course training, but by 2002, no difference was evident.

Personal characteristics are also related to training. Both univariate and multivariate techniques show that 55- to 64-year-olds take less training than workers aged 25 to 34. While health, recreation and fitness courses could be helpful and easily transferable into retirement (Underhill 2006), this would not be the case for training that would be used only at work, such as for specialized software or machinery,.

Higher levels of education are associated with greater participation in employer-supported training—a result confirmed throughout the adult training literature. Furthermore, the effect of higher education for women was larger in 2002 than in 1993. Specifically, women

Table 2 Odds ratios associated with job-related employer-supported training

	Men			Women		
	1993	1997	2002	1993	1997	2002
			odds ratio			
Age						
25 to 34 (ref)	1.0	1.0	1.0	1.0	1.0	1.0
35 to 44	1.1	0.9	0.9	1.0	1.1	1.2
45 to 54	0.9	0.9	0.9	1.0	1.1	1.1
55 to 64	0.8	0.6*	0.6*	0.5*	0.8	0.8(*)
Less than high school (ref)	1.0	1.0	1.0	1.0	1.0	1.0
High school graduate	1.5*	1.9*	2.3*(*)	2.1*	2.1*	2.6*
Postsecondary diploma						
or certificate	2.3*	2.8*	3.3*	2.3*	2.5*	3.9*(*)
University degree	2.2*	2.7*	2.9*	2.3*	3.1*	5.4*(*)
No children (ref)	1.0	1.0	1.0	1.0	1.0	1.0
1 child	1.0	1.1	0.8*	1.4*	1.2	0.8(*)
2 children	1.2	1.3*	1.1	1.5*	1.1	1.0(*)
3 or more	1.0	1.3	0.8	1.1	1.2	0.9
No spouse (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Spouse	1.3*	1.4*	1.3*	1.0	1.0	1.1
Full-time job (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Part-time job	0.4*	0.5*	0.5*	0.5*	0.7*(*)	0.5*
Unionized (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Non-union	0.7*	0.8*	0.9(*)	0.8*	0.8*	1.0
Professional and managerial (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Clerical, sales and service	0.6*	0.7*	0.6*	0.5*	0.6*	0.6*
Blue collar	0.6*	0.6*	0.6*	0.4*	0.3*	0.4*
One year or less in job (ref)	1.0	1.0	1.0	1.0	1.0	1.0
1 to 6 years in job	1.6*	2.3*	1.5*	2.3*	1.8*	2.1*
6 to 20 years in job	1.8*	2.4*	1.6*	3.1*	2.4*	2.1*
20 and over	2.0*	2.9*	1.6*	2.7*	2.6*	2.4*
Firm size (employees)						
Less than 20 (ref)	1.0	1.0	1.0	1.0	1.0	1.0
20 to 99	2.1*	1.4*	1.6*	1.3	1.7*	1.3
100 to 500	2.6*	3.0*	1.7*	2.3*	2.3*	1.7*
Over 500	5.7*	2.6*(*)	2.2*(*)	2.7*	2.1*	1.8*(*)
Public sector (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Private sector	0.7*	0.7*	0.6*	0.6*	0.8*	0.6*
Newfoundland and Labrador	0.8	0.7	1.0	0.6*	0.7	0.9
Prince Edward Island	1.0	1.2	1.3	1.9*	1.1	1.0(*)
Nova Scotia	1.1	1.4*	1.3	0.9	1.2	1.7*(*)
New Brunswick	1.0	0.7	1.5*(*)	0.6*	0.7	1.2(*)
Quebec	0.7*	0.5*	1.1(*)	0.6*	0.5*	1.0(*)
Ontario (ref)	1.0	1.0	1.0	1.0	1.0	1.0
Manitoba	1.2	0.9	1.3	1.2	1.1	1.2
Saskatchewan	1.2	1.5*	1.5*	1.2	1.2	1.2
Alberta	1.0	1.0	1.2	1.5*	1.2	1.2
British Columbia	1.2	1.1	1.2	1.4*	1.1	1.4*

* significantly different from the reference category (ref) [p < 0.05]
(*) significantly different from the 1993 figures (p < 0.05)
Source: Statistics Canada, Adult Education and Training Survey.

Table 3 Participation in employer-supported training

	Men				Women		
	1993	1997	2002		1993	1997	2002
				%			
Total	**23**	**20**(*)	**22**		**23**	**22**	**25**(*)
25 to 34 (ref)	21	18(*)	24		22	21	26
35 to 44	26*	21*(*)	24		26*	24	26
45 to 54	24	23*	22		24	24	27
55 to 64	15*	13*	14*		11*	13*	18*(*)
Less than high school (ref)	10	8	7(*)		7	7	6
High school graduate	19*	17*	18*		21*	18*	17*
Postsecondary diploma							
or certificate	27*	22*(*)	25*		25*	24*	28*(*)
University degree	34*	29*(*)	29*(*)		33*	33*	40*(*)
No children (ref)	20	16(*)	21		20	21	27(*)
1 child	22	21*	20		25*	24	24
2 children	27*	24*	26*		27*	23(*)	25
3 or more	23	24*	20		20	22	21*
No spouse (ref)	19	14(*)	20		23	22	26(*)
Spouse	24*	22*	23		23	22	25
Full-time job (ref)	23	21(*)	23		26	24	29(*)
Part-time job	6*E	9*E	9*E		13*	15*	15*
Unionized (ref)	27	24(*)	30		30	28	38(*)
Non-union	22*	21	25*(*)		19*	22*	24*(*)
Professional and managerial (ref)	34	29(*)	29(*)		34	32	35
Clerical, sales and service	19*	16*	20*		16*	16*	17*
Blue collar	16*	14*	15*		8*	7*E	10*
One year or less in job (ref)	12	10	16(*)		10	12	14(*)
1 to 6 years in job	21*	19*	23*		21*	21*	26*(*)
6 to 20 years in job	26*	23*(*)	23*(*)		29*	26*	27*
20 and over	27*	23*	22*		24*	27*	34*(*)
Firm size (employees)							
Less than 20 (ref)	10	10	14(*)		12	12	17(*)
20 to 99	19*	15*	22*		18*	22*	22*
100 to 500	23*	27*	26*		29*	28*	31*
Over 500	39*	27*(*)	32*(*)		33*	29*(*)	34*
Private sector (ref)	19	17(*)	18		16	17	17
Public sector	34*	32*	37*		32*	31*	37*(*)
Newfoundland and Labrador	20	16*	22		18	17*	24
Prince Edward Island	21	17	22		36*	24(*)	27
Nova Scotia	25	26	24		22	27	34*(*)
New Brunswick	23	18*	27*		16*	19*	28(*)
Quebec	19*	13*(*)	22		16*	14*	25(*)
Ontario (ref)	24	22	21		24	24	24
Manitoba	24	21	24		25	22	28
Saskatchewan	25	25	24		24	26	29*
Alberta	24	21	23		27	26	25
British Columbia	25	21	22		27	24	28

* significantly different from the reference category (ref) [p < 0.05]
(*) significantly different from the 1993 figures (p < 0.05)
Source: Statistics Canada, Adult Education and Training Survey.

who had a university degree had 2.3 times the odds of participating compared with those who did not finish high school in 1993, whereas, in 2002, the odds ratio was 5.4. So, having a better education had a larger positive effect in 2002 than in 1993 on the odds of training.

In 1993, having one or two children improved the odds of training for women. In 2002, having children had no effect.

In 1993, women in Newfoundland and Labrador, New Brunswick and Quebec had lower odds of participation in employer-supported training than women in Ontario. In Prince Edward Island, Alberta and British Columbia, their odds were higher.

Comparing 2002 and 1993 results for women, the odds of participation in several provinces changed to the point where they were the same as the Ontario benchmark. For Prince Edward Island, the odds fell from 1.9 times relative to those in Ontario in 1993 to 1.0 in 2002 (meaning the odds of participation were the same in both provinces). For New Brunswick and Quebec, the odds ratios increased to the Ontario level over the same period. In 2002, women in Nova Scotia and British Columbia had higher odds of participation than in Ontario.

In 1993, living in Quebec reduced men's odds of participation relative to Ontario. However, by 2002, this difference disappeared. Also in 2002, men in New Brunswick and Saskatchewan had higher odds of training than men in Ontario.

Training without employer support

As mentioned earlier, the participation rate for training without employer support is much lower than for training with employer support. Most people reported only one type of training (with employer support or without employer support)—rarely both (less than 1% in 1993, and only 2.5% in 2002).

Tenure is an important factor for those who undertake training activities on their own. Having more than one year of tenure lowers the odds of participation with no employer support for men and women (Table 4). For instance, men in 2002 with six years or more of tenure had two-fifths the odds of those with one year or less. Since less employer-supported training is offered to workers with less than one year of tenure, this suggests a training gap for recent hires.

Many are bridging the gap by taking training without employer support. However, the notion that employers do not supply enough training resources to employees seems unfounded, since only 2% of employees in 2002 with one year of tenure or less thought a lack of employer support was a barrier to training.

Men employed part time in 1993 had much higher probabilities of training without employer support than those with full-time employment. With less job security, part-time workers might be particularly keen to acquire the skills they need to do their jobs well, and therefore participate in training even without employer support. The effect was not seen in 1997 or 2002. This suggests that from 1993 to 2002, the odds of men in full-time jobs training without employer support increased relative to men in part-time positions. The incidence of training without employer support for men increases from 3 percent to 9 percent from 1993 to 2002, and for part-time workers there is no change (Table 5).

Workers in Quebec had lower odds of participating in training without employer support than those in Ontario.

The increase in the incidence of training without employer support from 1993 to 2002 was seen across all characteristics, with no one factor predominating. It is noteworthy that the odds of participating in training without employer support rose for men in full-time jobs from 1993 to 2002 relative to men in part-time employment.

Summary

The rapid change of pace in today's economy demands more skills from workers than ever before. One way to meet the need is by taking training courses (see *Courses are very diverse*). From 1993 to 2002, the incidence of employer-supported training remained steady at 23 percent. However, the incidence of taking training without employer support increased from 4 percent to 10 percent over the same period. This suggests that Canadians have seen a clear need to improve their job skills using their own resources. Over this period, men in full-time employment participated more in training without employer support compared with those in part-time employment where participation levels remained the same. In 1993, 1997 and 2002, higher levels of education were associated with

Table 4 Odds ratios associated with training without employer support

	Men				Women		
	1993	1997	2002		1993	1997	2002
				odds ratio			
Age							
25 to 34 (ref)	1.0	1.0	1.0		1.0	1.0	1.0
35 to 44	1.5	1.3	1.1		1.9*	1.0	1.1(*)
45 to 54	0.9	1.1	1.2		2.0*	1.4	1.1(*)
55 to 64	0.3*	0.7	1.2(*)		0.7	0.7	1.2
Less than high school (ref)	1.0	1.0	1.0		1.0	1.0	1.0
High school graduate	2.5*	4.1*	2.3*		1.3	2.9	1.2
Postsecondary diploma							
or certificate	3.4*	4.1*	2.5*		2.6*	6.4*	2.4*
University degree	5.5*	7.3*	3.4*		2.8*	5.6*	3.4*
No children (ref)	1.0	1.0	1.0		1.0	1.0	1.0
1 child	3.3*	0.7(*)	0.7(*)		0.9	0.7	0.9
2 children	1.8*	0.6(*)	1.0		0.8	1.0	1.1
3 or more	1.6	1.0	1.1		0.9	1.1	1.1
No spouse (ref)	1.0	1.0	1.0		1.0	1.0	1.0
Spouse	0.5	1.3	1.0		1.2	0.6*(*)	0.8
Full-time job (ref)	1.0	1.0	1.0		1.0	1.0	1.0
Part-time job	4.2*	1.5	1.6(*)		0.8	1.0	1.1
Unionized (ref)	1.0	1.0	1.0		1.0	1.0	1.0
Non-union	0.9	0.8	1.1		1.0	1.6	1.3*
Professional and managerial (ref)	1.0	1.0	1.0		1.0	1.0	1.0
Clerical, sales and service	1.8*	1.6	0.8(*)		1.0	0.6*	0.6*
Blue collar	0.9	1.3	0.8		0.8	1.2	0.7
One year or less in job (ref)	1.0	1.0	1.0		1.0	1.0	1.0
1 to 6 years in job	0.4*	0.5*	0.6*		0.4*	0.3*	0.6*
6 to 20 years in job	0.3*	0.5	0.4*		0.3*	0.2*	0.6*(*)
20 and over	0.2*	0.2*	0.4*		0.4*	0.2*	0.7
Firm size (employees)							
Less than 20 (ref)	1.0	1.0	1.0		1.0	1.0	1.0
20 to 99	1.2	0.8	0.9		1.1	0.8	0.9
100 to 500	1.4	1.0	1.2		0.9	1.3	1.1
Over 500	1.2	1.5	1.1		1.0	1.0	1.4*
Public sector (ref)	1.0	1.0	1.0		1.0	1.0	1.0
Private sector	1.1	1.1	0.9		0.8	0.5*	0.8
Newfoundland and Labrador	0.9	0.5	1.2		0.4	0.8	0.7
Prince Edward Island	0.5	0.9	1.0		1.2	1.2	1.3
Nova Scotia	1.5	1.2	0.9		1.2	0.6	0.7
New Brunswick	0.6	0.5	0.6		0.4*	0.9	0.6
Quebec	0.4*	0.3*	0.4*		0.4*	0.2*	0.4*
Ontario (ref)	1.0	1.0	1.0		1.0	1.0	1.0
Manitoba	0.9	0.6	1.3		0.9	0.6	0.7*
Saskatchewan	0.8	0.4	1.1		0.8	0.5	0.7
Alberta	1.1	0.8	0.9		1.3	0.8	0.8
British Columbia	1.2	0.8	1.1		1.4	1.0	1.1

* significantly different from the reference category (ref) [p < 0.05]
(*) significantly different from the 1993 figures (p < 0.05)
Source: Statistics Canada, Adult Education and Training Survey.

Table 5 Participation in training without employer support

	Men			Women		
	1993	1997	2002	1993	1997	2002
			%			
Total	**3**	**3**	**9**(*)	**5**	**3**(*)	**11**(*)
25 to 34 (ref)	4	3	7(*)	4	4 E	10(*)
35 to 44	4E	2E	9(*)	5*	3(*)	10(*)
45 to 54	2*	2E	10*(*)	6*	3(*)E	11(*)
55 to 64	1*E	F	10(*)	2*E	F	11(*)
Less than high school (ref)	1E	1E	4(*)E	2E	F	4E
High school graduate	3*E	2*E	7*(*)	3	2 *(*) E	6*(*)
Postsecondary diploma or certificate	4*E	3*	8*(*)	6*	4 *(*) E	11*(*)
University degree	5*E	4*	15*(*)	7*	5 *	17*(*)
No children (ref)	2	3	9(*)	5	4	11(*)
1 child	5*E	2(*) E	7	5E	2(*)E	9(*)
2 children	3	2E	9(*)	4	3	11(*)
3 or more	3E	3E	10(*)	5E	4 E	11(*)
No spouse (ref)	4E	3E	8(*)	5	5 E	10(*)
Spouse	3	2	9(*)	5	3(*)	11(*)
Full-time job (ref)	3	2	9(*)	5	3(*)	10(*)
Part-time job	12*E	5(*) E	13*	5	4	11(*)
Unionized (ref)	3	2E	6(*)	5	4 E	11(*)
Non-union	4	3	6(*)	5	2 *(*)	7*(*)
Professional and managerial (ref)	3	3	12(*)	6	5	14(*)
Clerical, sales and service	5E	3E	8*(*)	4	2 *(*)	8*(*)
Blue collar	2E	2*E	6*(*)	3*E	F	7*(*)E
One year or less in job (ref)	7	5E	11	10	7 E	11
1 to 6 years in job	3*E	3*E	9(*)	5*	3 *(*)	10(*)
6 to 20 years in job	3*	2*E	8(*)	3*	2*	11(*)
20 and over	1*E	1*E	8*(*)	F	2*E	11
Firm size (employees)						
Less than 20 (ref)	3E	2E	6(*)	5	2(*)E	6
20 to 99	4E	2*E	5E	5E	2(*)E	6
100 to 500	4E	2E	7E	4E	4 E	8(*)
Over 500	3E	3E	6(*)	5	3(*)E	10*(*)
Private sector (ref)	3	3	8(*)	4	2(*)E	8(*)
Public sector	3	2E	11*(*)	6*	5*	13*(*)
Newfoundland and Labrador	3E	F	12(*)E	F	F	9(*)E
Prince Edward Island	F	F	10(*)E	6E	5E	14(*)E
Nova Scotia	5E	3E	10(*)E	6E	F	10
New Brunswick	F	F	8(*)E	3*E	4 E	10(*)
Quebec	1*E	F	6(*)	3*E	1 *E	7*(*)
Ontario (ref)	3E	3	9(*)	5	4 E	12(*)
Manitoba	3E	2*E	11(*)	4E	3 E	9(*)
Saskatchewan	2E	F	10(*)	5E	3 E	11(*)
Alberta	4E	3E	9(*)	7	4(*)E	11(*)
British Columbia	4E	4E	11(*)	8E	4 E	13(*)

* significantly different from the reference category (ref) [p < 0.05]
(*) significantly different from the 1993 figures (p < 0.05)
Source: Statistics Canada, Adult Education and Training Survey.

Courses are very diverse

The concept of a job-related course is fairly broad. In 2002, the most frequently taken courses were in business, management and public administration. This is not surprising since a large portion of those taking courses are in professional or managerial jobs. In second and fourth places were mathematics, computer and information sciences; and architecture, engineering and trades. This likely reflects the importance of computer skills and information technology in the workplace, and the importance of training in the engineering and trades fields. In third and fifth places were health, recreation and fitness; and personal improvement.

In 1993, workers taking training averaged roughly 1.6 courses. This rose to two courses in 2002, and the average duration increased. Courses taken without employer support were about the same duration in both years.

Note: Will not add to 100% because people can take more than one type of course.
Source: Statistics Canada, Adult Education and Training Survey, 2002.

% of population
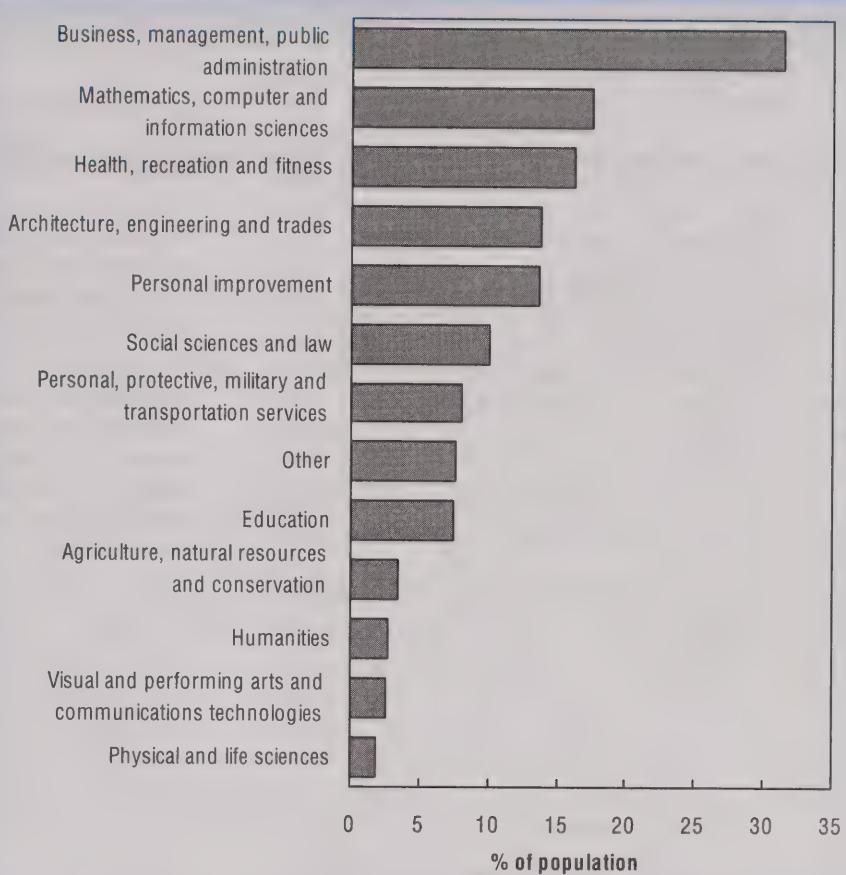
higher odds of participation for Canadians who took training without employer support. Also, one year or less of tenure was associated with higher odds of participation.

For those taking training with employer support, a number of key factors also influenced their participation rates. Higher education levels, more than one year of tenure, larger firm size, professional or managerial work, and public-sector employment led to higher odds of training participation for each year examined (1993, 1997 and 2002). For women, the period from 1993 to 2002 saw an increase in the impact of education on participation, which is particularly important given the already large effect of education relative to other factors examined.

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■ Notes

1. Information in the AETS will now be collected in the Access and Support to Education and Training Survey from Statistics Canada, scheduled to start in 2008.

2. Public-sector employees are those in public administration at the federal, provincial and municipal levels, as well as in Crown corporations, liquor control boards and other government institutions such as schools (including universities), hospitals and public libraries.

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Perspectives on Labour and Income

The quarterly for labour market and income information

Running a census in a tight labour market

Ted Wannell

Canadians value government services that are timely, cost effective and appropriate to their needs (Marson 2007). Many services—such as schooling, health care, public transit and immigration support—require information on small geographic areas for effective delivery. Moreover, accurate population counts are needed to determine the intergovernmental transfers that support these services. The Census of Population is conducted every five years to meet the needs of all levels of government in serving the public.

In addition to supporting service delivery, the census also enables research on a wide range of social and economic issues. Income inequality, returns to education, the integration of immigrants and changing patterns of employment are just a few of the topics that have been explored with census data. Moreover, demographic information is of great value to Canadian businesses, providing them with commercial opportunities.

While the census provides input to a number of other government activities, it is a huge and labour-intensive activity in and of itself. A small core of project managers within Statistics Canada begins planning each census years in advance. In the year leading up to the census, hundreds of Statistics Canada employees are reassigned to temporary duties in the design, development and implementation of the census. Finally, thousands of temporary workers are hired to conduct the footwork necessary to complete the collection fieldwork. For the 2001 Census, 36,000 enumerators and other field staff were hired.

Although census content remains relatively consistent across time,[1] Statistics Canada is continually examining means to remain relevant to evolving information

needs and to maintain and improve the quality of the data, the sense of confidentiality for respondents and the efficiency of operations. To advance these aims, the inner workings of the 2006 Census experienced greater changes than they had for decades. Most conspicuous to respondents was the collection methodology.

2006 Census innovations

In the past, census forms were distributed and picked up by enumerators at every dwelling in the country. Enumerators put a very personal face on census collection, strengthening the connection between community-based collection and downstream community benefits. Even though most of the forms were filled out by respondents without enumerators present, the impression that enumerators recruited from their own neighbourhoods might see their personal data was a perceived confidentiality issue for some.

For the 2006 Census, for the first time, forms were mailed out to 70% of households. In the remainder of the country, addresses needed to be verified by enumerators who left questionnaires at the same time (list/leave areas). Both sets of households then had the option to return their paper forms by mail or online, using a secure Internet form. For all returns, quality issues and incompleteness were dealt with by telephone follow-up from one of three central locations. The Internet form had automated quality checks built in so that the amount of follow-up was significantly lessened. Overall, one in five households responded by Internet, the highest proportion among countries that have introduced an Internet-response option.

Changes to data capture and processing were less visible to the public but nevertheless integral to the overall plan. Capture operations were centralized in Ottawa-Gatineau and automated through the use of high-speed scanners and software able to digitize handwritten responses.

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Even though the primary motives for the changes were to provide response options, increase long-term efficiencies and address privacy concerns, the new processes also resulted in a significant reduction in anticipated staffing. Since enumerators had fewer tasks to complete relative to earlier censuses, they could cover larger areas and thus fewer needed to be hired and trained. Moreover, the built-in quality controls in the Internet forms were designed to reduce the volume of call-backs required to resolve missing or incomplete responses. Overall, these and other changes led to a drop in planned temporary staffing from 36,000 in 2001 to some 27,000 in 2006.

As is common with large-scale projects and now required by federal government policy, the 2006 Census operated under a risk-management framework. Some of the significant risks identified during planning were the development schedule for all the new information-technology components, the functionality of the Internet forms, the ability of the hardware to handle Internet traffic at peak times, and the ability to recruit enumerators in several cities in Alberta with very tight labour markets. In the end, technological developments came off very well, but labour shortages proved to be more acute and widespread than anticipated.

A hot labour market

In 2006, the census took place in the hottest labour market in a generation. In the 12 months leading up to the May 16 Census Day, the economy had added more than 400,000 full-time jobs while shedding 36,000 part-time positions (Statistics Canada 2006). In May alone, full-time employment increased by 151,000. Nationally, the unemployment rate was at a 32-year low of 6.1%. The unemployment rate dipped to 3.4% in Alberta and was under 5% in all provinces west of Ontario. Although unemployment was somewhat higher in eastern Canada, many regions were nevertheless at long-term lows.

The accelerating demand for employment had an inflationary impact on wages. While the Consumer Price Index had increased 2.8% in the preceding 12 months, average earnings were up 3.8%. In the tight Alberta labour market the increase was 7.3%. As a point of reference, average hourly earnings were $19.60 nationally and $20.95 in Alberta, compared with the legislated rate of $11.88 for enumerators and $15.62

for supervisors (or piece-rate equivalents). These rates were set to account for the generally tighter national labour market in 2006 and a different mix of tasks compared with 2001.

The big day approaches

Since the 2006 Census was to rely heavily on the mail-out of forms, it was important that they be mailed to correct addresses. Addresses were generated from a central database, the Address Register (AR), based on information collected from the past few censuses and updated through a variety of sources, including field verification. The field verification of the address information from the AR is called 'block canvassing' and it represents the first labour-intensive field work of the census cycle. Block canvassing for the 2006 Census was carried out in two waves, beginning in September 2005 and ending in April 2006. The late block canvassing focused on areas like new subdivisions, where changes to the list of addresses were expected. Approximately 2,000 temporary workers were hired for block canvassing, with no major problems being encountered.

In the weeks before census day, the technological innovations were the foremost concern of the management team—particularly the Internet application. A team of external experts had certified the security of the Internet applications, but would the online form engage respondents and perform under such real-world situations as dropped connections and user-based interruptions? Would the hardware handle the volume? To experience, as best as possible, census day conditions, the application underwent a series of automated volume tests simulating large numbers of concurrent users prior to going live.

On census day and during the following weeks, the Internet application worked very well. The number of respondents who could log on at one time was limited in order to avoid bogging down the system, but this 'graceful deferral' had to be invoked only for six hours on Census Day. (The peak was on Census Day when the total number of responses was almost 300,000.) Respondents who were deferred were asked to come back and try later—in many cases that meant only a few minutes. Overall, one in five respondents chose to use the Internet, which was at the high end of the forecast range. And the data proved to be of high quality relative to paper responses.

The role of enumerators

As mentioned earlier, 70% of households live in areas covered by the AR. They received their census forms—along with the invitation to respond by Internet—in the mail about one week before census day. The delivery of census forms to households not covered by the AR (list/leave) represented the first major task for the small army of census enumerators. It took place about the same time as the mail-out—in the two weeks leading up to census day.

Since the accuracy of population estimates for small areas is important for the delivery of public services such as education and programs for the elderly, achieving consistently high response rates across the country is a key objective of the census. The second major task for enumerators was to follow up on households from which no response, either by paper or Internet, had been received 10 days after census day. The enumerators had to determine whether the dwelling at the address was indeed occupied and, if so, collect the form from occupants or help them complete the form. Non-response follow-up was to have continued into July with collection activities wrapping up by the end of that month.

Enumerators were hired by a network of local field offices according to standards and wage levels set in federal legislation. The network consisted of 3 regional centres, 36 local offices and 38 sub-local offices. Hiring for list/leave and non-response follow-up operations began in April 2006 with the goal of hiring 27,000 enumerators in phases during this process. Approximately 260,000 applications were received.

The first signs of problems

Past censuses have run into hiring difficulties in localized areas with tight labour markets. As identified in the risk management document, some difficulties were expected in Alberta where unemployment was at an unprecedented low and wages were rapidly rising. The 2006 wage rates had been set to account for a tighter labour market and the more skill-intensive follow-up work, but once the rates had been legislated few options were available. To make the temporary enumeration jobs as attractive as possible, some enumerator positions were offered at supervisors' pay rates where shortages were most acute.

While response to recruitment efforts seemed adequate in the aggregate, the geographic distribution of applicants was very uneven. In areas covering 9,000 collec-

tion units and representing about 4,500 jobs no applications were received. These were mainly rural areas. Thus it was evident early on that enumerators from adjacent units would have to be moved in to cover the workload. Moreover, many of those who did report were willing to work only part-time hours. Although these problems were particularly acute in hot labour markets in Alberta, a number of other trouble spots cropped up: Vancouver, Toronto and Montreal, without question, but also medium- and smaller-sized cities in Ontario and Atlantic Canada (e.g. rural and bedroom communities just north of Toronto—Orangeville, Stouffville/Uxbridge; Halifax/Dartmouth; and eastern P.E.I.).

Overall, no more than 17,000 enumerators were on the job at any point during the 2006 Census. This number dwindled rapidly to 9,000, with only 3,000 willing to work more than 20 hours per week.

Although the labour issues appeared early in the collection period, the scope and acuity of the problems did not become evident until interim response rates were tallied in preparation for non-response follow-up. Response rates were slightly lower than anticipated across the country and were particularly low in the areas with list/leave hiring problems. These two observations had several implications. First, without a late wave of responses, non-response follow-up would generally require more labour input than anticipated. Second, the demand for this labour would be greatest in areas where hiring difficulties were most acute. Finally, the patterns of non-response could lead to data quality problems if they weren't successfully addressed in the follow-up.

Assessment and response

The risk-management framework is intended to guide response to these types of problems. Since the early returns indicated widespread non-response issues, some national-level responses were required. The first was to extend the Census communications program, which normally tapers off after the collection period. The program emphasized the importance of the census and highlighted the two response options. The second general response was to extend the collection period for one month.

The decision to extend the collection period was influenced by very positive experiences on the technical side. The Internet application was working well, producing very clean data and, as mentioned, the level

of use was at the high end of expectations. The high-speed scanners were working to specification in the central processing facility and passing good volumes of data for further processing. One important aspect of processing is a loop-back to telephone follow-up where incomplete responses are noted by quality control software. The high quality of the Internet response data and the quick pass-through from the scanned data resulted in a lower volume of work and rapid progress for this manual process. Thus it was anticipated that the collection period could be extended, at least for a short period, without affecting subsequent processing and dissemination milestones. It also provided the opportunity to try another process innovation, shifting some non-response follow-up from field enumerators to the telephone unit that had been doing the failed edit follow-up.

Another piece of the technological puzzle would help guide the non-response follow-up. Since individual responses could be coming from either the Internet or paper forms, a control file that integrated responses from both sources was required. This file was continually updated and could therefore be used to direct the most intensive follow-up activities to areas with the lowest response rates.

With the extension of the collection period and the geographic targeting of activities, the human resource philosophy of non-response follow-up gradually changed from trying to hire more people to more effectively using those already on the job. As overall response rates inched upwards and were tallied in the control file, active collection management could kick in. Enumerators in areas with high response rates were shifted to nearby areas with low response rates. For example, enumerators from suburban or nearby rural areas would be shifted to city centres where response rates were generally lower. This shifting of resources had occurred in previous censuses, but not to the extent required in 2006.

While the movement of enumeration 'triage' teams was effective in many areas, in others widespread labour shortages or other difficulties (like the reluctance of some rural enumerators to work in downtown neighbourhoods) called for further escalation. Several weeks into the collection extension, it was clear that adequate response rates could not be achieved for some areas with available staff in the region. With the volume of processing winding down, temporary workers from the Ottawa processing centre were recruited for local

non-response follow-up since Ottawa was one of the problem areas. More significantly, a call went out to headquarters employees to volunteer for follow-up activities in other areas where non-response remained high—particularly Alberta. Overall, some 400 employees responded to the call and 130 were selected and trained. Most were deployed to Alberta for non-response follow-up and, working long hours, provided the push required to achieve adequate response rates in many areas. A peripheral benefit of this exercise is that ongoing staff now have a better appreciation for some of the collection challenges and issues faced by field staff.

Downstream consequences

Large-scale collection activities and the Internet application were cut off at the end of August. As a result, processing activities had to be extended until mid-October. Review of the remaining milestones indicated that compressing the activities to meet the original dissemination targets presented unreasonable risks to the quality of the information to be released. Therefore, in October 2006 the decision was made to set back the first release date by one month. Since the technological innovations had been anticipated to speed up the release schedule by one month compared with the 2001 Census, in the end, the labour-shortage issue offset the gains from the technological advances.

In terms of data quality, it is difficult to pinpoint the impact of labour shortages. Response rates to all surveys have generally been declining in recent years and the census proved to be no exception, as evidenced by somewhat lower than anticipated response rates across the country. Certainly, some areas presented particular difficulties, resulting in unprecedented actions. Active collection management limited the impact, but some variation in results persisted. Overall, a response rate of 98% had been targeted for the 2006 Census collection activities, while the actual rate achieved was 97.3% (comparable to the 98.4% in 2001). Of the 47,500 collection units across the country, 55% achieved the benchmark, 35% were certified with somewhat lower rates, and the remaining 10% were accepted with an average response rate of 94% after remedial actions (Office of the Auditor General of Canada 2007). More detailed data-quality indicators are produced along with census releases and through specialized post-censal studies.

Obviously some of the measures taken to increase response rates in the most affected areas resulted in relatively higher collection costs in those areas. But these higher-than-expected costs were managed within the context of greater-than-expected savings from technological developments and the lower-than-expected staffing levels early in the collection period. As a result, the 2006 Census was managed within its allotted budget. An examination of the management of the 2006 Census by the Office of the Auditor General concluded the actions taken appropriately balanced accuracy, timeliness and cost.

Lessons learned

Although considered the riskiest aspect of the 2006 Census, the process and technological innovations contributed significantly to the overall operation. The mail-out of questionnaires using the Address Register reduced listing costs and increased respondents' sense of confidentiality. The Internet-response option yielded high-quality data with little need for post-collection follow-up. The paper questionnaire scanners performed to specification resulting in significant savings compared with manual entry. The master control system required to integrate the paper and Internet responses increased the ability to actively manage the non-response follow-up process. All of these positives helped to offset the difficulties encountered on the human resources side.

Given these successes, the 2011 Census will re-use the 2006 technological approaches while increasing the targets for mail-out areas and the Internet. Through further investments in the Address Register in the coming years, the target for mail-out coverage will be increased from 70% in 2006 to 80% in 2011. As for Internet response, the aim is to almost double the rate to 40%. This seems attainable since recent polling by a private contractor indicated that the Internet was the preferred method of survey response by over half of those polled.

Achieving these goals should also significantly reduce the labour input required for the list/leave and failed edit (telephone) follow-up operations.

Even assuming the best-case scenarios for Address Register development and Internet-response take-up, the 2011 Census will remain a labour-intensive undertaking requiring approximately 20,000 temporary workers. Plans to minimize the type of staffing difficulties encountered in 2006 include a higher hourly pay rate, improved geo-mapping tools to better match applicants to available positions, a streamlined hiring process to more quickly confirm to applicants if they have been retained for jobs, improved communication strategies, and additional tools for recruiters (like labour-force profiles for their respective areas).

Perspectives

■ Note

1. Changes to the forms (particularly the long form) do occur over time, subject to a prescribed consultation process during each inter-censal period.

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Life after teenage motherhood

May Luong

The general view has been that teenage child-bearing will have long-term negative effects on the mother's well-being. The argument being that these individuals will have more difficulty completing high school because of the time off required for pregnancy, recuperation and childcare. And so, it is also less likely that they will be able to continue on to postsecondary education to acquire the skills for better jobs. Since low-skilled jobs tend to pay less, it follows that teenage mothers will have a higher likelihood of living in low income.

Indeed, American research during the 1970s and 1980s consistently documented the negative effects of teenage childbearing across a range of outcomes, finding that teenage mothers were more likely to be socially and economically disadvantaged throughout their lives than women who delayed childbearing. Teenage mothers were also less likely to complete their education, be employed and earn high wages, or be married. Furthermore, they were more likely to have larger families and receive welfare (Hayes 1987). Not only is the well-being of teenage mothers affected by their situation, teenage motherhood is also a repetitive cycle that can affect the likelihood that their children end up in the same situation. Indeed, one study found that, in the U.S., daughters of teenage mothers were 25 percentage points more likely to become teenage mothers themselves (Kearney and Levine 2007).

However, according to more recent research, the link between teenage childbearing and a poor socioeconomic outcome may not be causal—the probability of being a teenage mother and the probability of being disadvantaged later on may be due to having a disadvantaged family background from the start.[1] That is, women from disadvantaged backgrounds are more likely to end up disadvantaged even if they delay childbearing. And while teenage childbearing continues to

be a significant indicator of lower socioeconomic outcomes, the effect is smaller than originally believed (Ashcraft and Lang 2006; Levine and Painter 2003; Klepinger et al. 1997 and 1995; Ahn 1994; Hoffman et al. 1993).

Although research in the United States has placed tremendous efforts in disentangling the causal effects of teenage childbearing and family background, the research on this issue in Canada remains scarce. Most research in Canada has focused on trends in incidence and abortion rates using vital statistics data. Furthermore, the bulk of the research has been on educational outcomes, with few studies on other long-term socioeconomic outcomes such as labour force participation and living conditions. And while U.S. studies

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Chart A   Canada's teenage birth rate in the mid-range among developed countries

Birth rate per 1,000 women
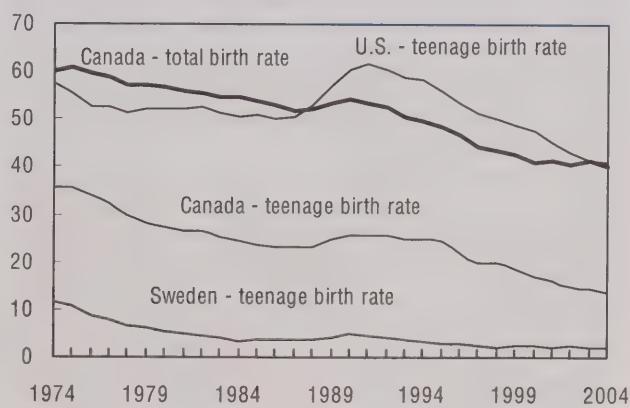
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show that teenage childbearing occurs predominantly among visible minority groups, Canada's very different ethnic profile suggests that the characteristics of teenage mothers in Canada may be very different.

Certainly the birth rate differs between the two countries. Canada remains far below the United States, which had a rate of 41.1 births per 1,000 teenage women in 2004 and has traditionally had the highest teenage birth rate of all developed countries (Chart A). In 2004, Canada had 31,611 teenage pregnancies (30.5 per 1,000 women aged 15 to 19), of which 14,075 resulted in live births (4.2% of all births that year). And although Canada's teenage birth rate fell dramatically from 35.7 to 13.6 during the last two decades, in 2004 it was still almost seven times higher than Sweden's, which continues to have one of the lowest teenage birth rates of all developed countries.

Using the Survey of Labour and Income Dynamics (SLID), this study examines the personal and long-term socioeconomic characteristics of women aged 30 to 39 who gave birth as teenagers (see *Data source and definitions*). SLID carries information on the educa-

tion of the parents of teenage mothers, which provides a proxy for family background. Specifically, this paper compares women who were teenage mothers with those who were adult mothers with respect to educational outcome, long-term labour force participation, and low-income status.

Teenage motherhood more than double among women with Aboriginal background

Among women who reported an Aboriginal background, 24% were teenage mothers compared with just 10% of other mothers. While Aboriginal background in SLID includes only those living off-reserve and is not representative of the whole Aboriginal population, those who reported an Aboriginal background in this study represented 3.8% of the sample compared with 3.5% of the population in 2001 and 4.0% in 2006.[4]

Unlike in the United States, immigrant women (visible minority or not) in Canada have a lower likelihood of being teenage mothers than native-born women not in a visible minority (Chart B). These results likely

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Data source and definitions

The **Survey of Labour and Income Dynamics** (SLID) covers roughly 97% of the Canadian population, excluding those in the territories, in institutions, on Aboriginal reserves or in military barracks. Each panel of respondents, approximately 15,000 households and 30,000 adults, is surveyed for six consecutive years. A new panel is introduced every three years, so two panels always overlap. This study pools the first cross-sectional wave of each of the five existing panels of SLID (1993, 1996, 1999, 2002 and 2005) in order to attain an adequate sample of women who were teenage mothers.

The study was restricted to women aged 30 to 39 in each reference year.[2] The upper age limit minimized cohort differences while maintaining an adequate sample of teenage mothers; the lower limit gave teenage mothers a chance to 'catch up' to adult mothers in terms of education. For example, most women graduate from high school by age 17 or 18, and college or university by age 22 to 25, but because teenage mothers may have a harder time completing their studies due to the birth of their first child (and possibly subsequent children), they may not have completed their highest level of education until their late twenties or older.

The sample excluded women who had never given birth (5,262) or for whom the age at first birth is missing (700). The final sample consisted of 19,064 mothers aged 30 to 39 during the reference year, just over 10% of whom gave birth as teenagers.

Teenage mothers are women who had their first birth under the age of 20. **Adult mothers** had their first birth at age 20 or older. A binary variable was derived using the self-reported 'age at first birth.' This was set to 1 for first birth under age 20 and 0 for first birth at a later age.[3]

Education refers to the highest level completed at the time of the survey, recoded into three groups: less than high school; high school diploma; and postsecondary degree, certificate or diploma.

Low income measures (LIMs) are set at 50% of median family income and adjusted for the number of people, reflecting the economies of scale inherent in family size and composition. The adjustment is based on the **family equivalence scale**, which is the sum of the 'equivalences' for each family member. The oldest person receives an equivalence of 1.0 and the second oldest person 0.4. All others 16 and older receive an equivalence of 0.4 and those under 16 receive 0.3. This adjusts family income for family size and composition in order to enable comparison of incomes for all families.

Disability status summarizes several questions. Starting with the 1999 reference year, the screening questions were significantly modified to reflect those used in the 2001 Census. For this reason, interpretation of the results must be made with care.

Chart B   Teenage childbearing lower among immigrants and visible minorities

Note: Results are restricted to those with a valid response.
Source: Statistics Canada, Survey of Labour and Income
       Dynamics, 1993, 1996, 1999, 2002 and 2005.

Table 1   Marriage and marital status of teenage and adult mothers

	Teenage mothers	Adult mothers
Age at first marriage	%	
Under 20	49*	8
20 to 24	19*	43
25 to 29	9*	28
30 to 39	4*	7
Never married	19*	13
Marriage and birth		
Married prior to birth	20*	72
Married same year as birth	22*	6
Married post birth	39*	8
Never married	19*	13
Current marital status		
Married	60*	76
Common-law	14*	10
Separated	9*	5
Divorced	7*	4
Widowed	F	0E
Never married	10*	5

* statistically significant from adult mothers at the 0.05 level
  or better
Note: Results are restricted to those with a valid response.
Source: Statistics Canada, Survey of Labour and Income
       Dynamics, 1993, 1996, 1999, 2002 and 2005.

reflect varying immigration policies leading to differences in the ethnic, cultural and socioeconomic status of immigrants. That is, in Canada immigrants tend to be more educated because of the focus on skilled applicants, and women of educated families are less likely to be teenage mothers (Galarneau and Morissette 2004). Furthermore, the difference between the U.S. and Canada in the prevalence of teenage childbearing within visible minority groups may be partly attributable to different ethnic profiles.

Teenage mothers more likely to marry in their teens but not before their first birth

About half of teenage mothers also married in their teens, compared with only 8% of adult mothers (Table 1). And while 71% of the latter married in their twenties, only 28% of the former did so. Furthermore, teenage mothers were more likely to remain single (19% versus 13%).

Although teenage mothers tend to marry young, 39% waited at least one year after having their first child. Only 20% of teenage mothers married prior to giving birth and 22% married in the same year. The majority of adult mothers, on the other hand, married prior to their first birth (72%) with only 6% marrying the same year and 8% the subsequent year. While 19% of teenage mothers never married, 46% reported being in common-law relationships during the reference year.

Although individuals in common-law partnerships have many characteristics similar to the married, it was not possible to combine these groups since no date was provided for the formation of the union.

Although most teenage mothers were eventually married (60%) by the time they were in their 30s, the proportion still trailed that of adult mothers (76%). On the other hand, teenage mothers were more likely to live in common-law relationships (14% versus 10%). Nevertheless, teenage mothers were still more likely to separate or divorce. Furthermore, teenage mothers were almost three times more likely to report marrying more than once (16% versus 6%).

Since teenage mothers, by definition, started their families at a younger age, they would also have had more time to have subsequent children. Indeed, teenage mothers, on average, had larger families (2.5 children) than adult mothers (2.0 children). However, adult mothers may also have delayed the completion of their families. So, while teenage mothers are more likely to have completed their family formation, adult mothers may still be having more children well into their 30s or later.

Table 2 Marginal effects of the impact of teenage motherhood on education

	High school graduation	Completing postsecondary education
	Baseline probability (%)	
	91	55
Marginal effects	% points	
Timing of motherhood and marriage		
Teenage, married before age 20	-17*	-19*
Teenage, not married before 20	-17*	-14*
Adult, married before age 20	-7*	-17*
Adult, not married before 20	ref	ref
Father's education		
Less than high school	ref	ref
High school diploma	5*	10*
Postsecondary completed	7*	22*
Mother's education		
Less than high school	ref	ref
High school diploma	5*	10*
Postsecondary completed	8*	19*
Personal background		
Aboriginal	-4*	-12*
Non-aboriginal	ref	ref
Immigrant	0	6
Non-immigrant	ref	ref
Visible minority	2	-1
Non-visible minority	ref	ref
Elementary or high school education		
Newfoundland and Labrador	-4*	7*
Prince Edward Island	-5*	4
Nova Scotia	-2	4
New Brunswick	-2	-5*
Quebec	-3*	-2
Ontario	ref	ref
Manitoba	-1	-8*
Saskatchewan	4*	3
Alberta	2	-4
British Columbia	1	-5
Elsewhere	-5*	-11*
Wave		
1993	-2	-3
1996	ref	ref
1999	1	2
2002	3*	7*
2005	3*	11*
Year of birth		
1949 to 1955	3	4
1956 to 1960	2*	1
1961 to 1965	ref	ref
1966 to 1970	1	1
1971 to 1975	0	-1

* statistically significant from the reference category (ref) at the 0.05 level or better
Source: Statistics Canada, Survey of Labour and Income Dynamics 1993, 1996, 1999, 2002, 2005.

Teenage mothers less likely to have completed high school or postsecondary education

Separate logit regressions examined women's outcomes for high school and postsecondary completion (see *Modeling socioeconomic outcomes*). The sample consisted of women aged 30 to 39 in each reference year who had previously given birth. The baseline probabilities of completing high school and postsecondary education among all mothers were 91% and 55%, respectively (Table 2). As expected, even after controlling for other factors, the timing of motherhood was found to be significantly related to the chances of finishing high school or postsecondary education. Teenage mothers were 17 percentage points less likely to complete high school and between 14 and 19 points less likely to complete postsecondary studies. This is consistent with a study using the Youth in Transition Survey, which found teenage pregnancy and childrearing to be related to dropping out of high school (Bowlby and McMullen 2002).[5]

The timing of marriage and its interaction with the timing of motherhood was also significant. Marriage and birth do not necessarily coincide for young mothers. For example, the first birth for married teenage mothers may have been planned, but for those who were single the birth was more likely to be unplanned. Therefore, the combination of the timing of motherhood and marriage may reflect some unobserved differences either in personal characteristics or in their situations that may influence educational outcomes. The results show that teenage mothers not married prior to age 20 were slightly more likely to

Modeling socioeconomic outcomes

While descriptive analysis can provide some information on the relationship between teenage childbearing and long-term socioeconomic outcomes, multivariate analysis takes other factors that may influence these outcomes into account.

The outcomes studied were educational attainment, labour force participation, and living in low income. The education models used separate logit regressions estimating the marginal effects of teenage childbearing and other controls on the probability of completing high school and postsecondary school. A multinomial logit regression estimated the marginal effects of teenage childbearing and other controls on the probability of full-year, full-time employment, some employment, and not working. The income model used a logit regression to estimate the marginal effects of teenage childbearing and other controls on the probability of living in low income.

Logit regressions were chosen for the education and income models since the outcome variable had two responses. Similarly, the multinomial logit regression was chosen for the labour model because the outcome variable had three responses. Bootstrap weights were used to account for the effect of multi-stage sample selection in SLID. Stata was used to implement the model and bootstrap weights.

Note: Younger teenage mothers (age at first birth 17 and under) and older teenage mothers (age at first birth 18 to 19) were tested separately but no significant differences were evident, so the two groups were collapsed into one.

Immigrant and visible-minority status were also included in the model but were not statistically significant. The findings make sense—Canada's immigration policies are concentrated on skill selection, so many immigrants are going to be highly educated. Women with an Aboriginal background were found to be less likely to complete high school (-4 percentage points) or postsecondary studies (-12 points), consistent with previous research (Siggner and Costa 2005).

The model also controlled for the province or territory where most of the elementary or high school education was completed.[6] Although the results suggest some statistically significant differences between a few provinces and Ontario, they reflect conditions some 11 to 25 years prior to the reference year. Controls for cohort effect were not statistically significant. Finally, respondents from the 2002 and 2005 surveys were 3 percentage points more likely to have completed high school and 7 to 11 points more likely to have completed postsecondary studies than the 1996 respondents. This is not surprising since increasing emphasis has been put on higher educational attainment in order to qualify for better jobs. This can be seen especially in the higher marginal effect in recent years for postsecondary graduates.[7]

Education helps counter negative effects of teenage childbearing on labour market participation

Previous research on the consequences of teenage childbearing has focused on education because, in most cases, it largely determines earnings, labour force participation, and occupation. Little research has delved more deeply into other socioeconomic outcomes of teenage childbearing. However, because job-related skills acquisition and significant earnings growth are concentrated at the start of one's career, teenage motherhood may affect a woman's long-term wage rates. Indeed, in this study, real composite wage rates[8] for teenage mothers were $10.93 compared with $13.29 for adult mothers,[9] consistent with other studies. Women in Canada who postponed having children earned at least 6% more than those who had children early (Drolet 2002). Similarly, in the U.S. teenage childbearing reduced white women's earnings by 23% and black women's by 13% (Klepinger et al. 1997).

Among mothers aged 30 to 39 in the reference year, the baseline probability of full-year full-time employment was 41%; for some employment, 34%; and for not working, 24%. The results demonstrate an impor-

complete postsecondary school, having a 5 percentage point smaller decline than those married prior to age 20.

As expected, family background variables were statistically significant and showed that women of fathers with completed postsecondary education were 7 percentage points more likely to complete high school and 22 points more likely to complete postsecondary studies than women whose fathers had completed less than high school. Similarly, women whose mothers had completed postsecondary education were 8 points more likely to complete high school and 19 points more likely to complete postsecondary studies. Even parents who completed only high school were positively related to the likelihood of completing high school and postsecondary studies for women (between 5 and 10 percentage points). The interactions between age at first birth and parental education were not statistically significant and were subsequently dropped. Overall, parental education would seem to have a great influence on a woman's own educational outcome, regardless of teenage motherhood.

tant relationship between teenage childbearing and education on labour force participation (Table 3). The interaction between the timing of motherhood and education level shows that teenage mothers with less than high school were 9 percentage points less likely to be in full-year full-time employment and more likely not to have worked during the reference year than adult mothers who graduated high school. Similarly, adult mothers with less than high school were 10 points less likely to be in full-year full-time employment and 13 points more likely to be not working during the reference year. However, what is striking is that teenage mothers with a high school diploma were no different from the reference group. Furthermore, teenage mothers with a postsecondary degree or certificate were actually more likely to be in full-year full-time employment than adult mother counterparts (13 percentage points versus 5 points above the reference profile). The results suggest that education plays an important role in women's labour force participation. That is, women who were teenage mothers were just as likely, if not more so, than adult mothers of a similar education level to work full year, full time. However, other unobserved characteristics such as family support, social network and a variety of other resources, or psychological traits may be at play.

Family background remains an influence even in the long run. Women whose mothers finished high school or postsecondary studies were 5 percentage points more likely to work full-year full-time than women whose mothers had less than high school. Possibly, mothers act as role models for their daughters and highly educated mothers may instil values that encourage higher educational attainment and labour force participation. However, fathers with completed postsecondary education had a statistically significant negative effect. This counterintuitive result may be due to omitted variables. For example, parental income, parental divorce and growing up with only one parent could influence outcomes. However, since SLID is limited to parental education, it was not possible to control for other potentially relevant background information.

In terms of personal background, immigrant women were 7 percentage points less likely to be working full year and more likely to be not working than non-immigrants. This may reflect immigrant women's preference to stay home with their children even if they are no longer of preschool age. Also, immigrant women may have fewer employment opportunities due to language barriers. Recognition of foreign credentials and

foreign work experience, and limited job contacts may also be factors. Visible minority women were no more or less likely to be in full-year full-time employment than other women. However, visible minority women were less likely to be in other forms of labour force participation and more likely to be not working. Women who reported an Aboriginal background did not have a statistically different likelihood of being in full-year full-time employment. The results suggest that differences in women with an Aboriginal background and labour force participation were explained by other factors in the model.

Compared with married mothers, only single (never married) mothers were statistically different. Single mothers were 12 percentage points less likely to be in full-year full-time employment and 13 points more likely to not have worked during the reference year. This finding is consistent with previous research on lone mothers and their labour force participation (Dooley and Finnie 2001).

Other controls were also included and found to be statistically significant. These include disability status, province of residence, area size of residence, and year for which the respondent was surveyed.

Education matters more in determining low income

As noted, women who were teenage mothers have much lower average earnings than women who were adult mothers. However, their total personal after-tax income was not statistically different ($16,500 versus $17,500).[10,11] Although government transfers to families of the former were higher than to families of the latter (a difference of $2,600), after-tax family incomes showed a much larger gap. Families of women who were teenage mothers, on average, had after-tax income of $40,300 compared with $47,300 for families of adult mothers. However, most of the difference disappeared once family size was taken into account. Families of women who were teenage mothers had adjusted after-tax income of $19,900 compared with $23,800 for families of adult mothers.[12]

Nevertheless, 21% of families of women who were teenage mothers had adjusted income below the low-income measure (LIM) compared with just 12% of adult mother families. However, as with the labour outcomes, the logit model on the probability of living below the LIM showed a statistically significant (at the 0.05 level or better) interaction between timing of motherhood and education.[13] Both women who were

Table 3 Impact of teenage childbearing on labour force attachment of mothers aged 30 to 39

	Full-year full-time employment	Some employment	Did not work
	Baseline probability (%)		
	41	34	24
Marginal effects		% points	
Timing of motherhood and education			
Teenage, less than high school	-9*	1	8*
Teenage, high school diploma	-1	-1	1
Teenage, postsecondary completed	13*	2	-15*
Adult, less than high school	-10*	-3*	13*
Adult, high school diploma	ref	ref	ref
Adult, postsecondary completed	5*	5*	-10*
Father's education			
Less than high school	ref	ref	ref
High school diploma	-1	1	0
Postsecondary completed	-6*	3	3
Mother's education			
Less than high school	ref	ref	ref
High school diploma	5*	-3*	-1
Postsecondary completed	5*	-1	-4*
Personal background			
Immigrant	-7*	-1	7*
Non-immigrant	ref	ref	ref
Visible minority	1	-9*	8*
Non-visible minority	ref	ref	ref
Aboriginal background	0	-6*	5
No aboriginal background	ref	ref	ref
Disability reported	-15*	-2	17*
No disability reported	ref	ref	ref
Children born (mean = 2, ref)	-9*	3*	6*
Living with preschool-age children	-5*	-1	6*
No preschool-age children	ref	ref	ref
Gave birth during year	5	-6*	1
Did not give birth during year	ref	ref	ref
Age (mean = 35, ref)	1*	0	-1*
Marital status			
Married	ref	ref	ref
Common-law	2	-1	-2
Separated	2	-3	1
Divorced	5	-9*	4
Widowed	-8	-12	20
Never married	-12*	-1	13*

* statistically significant from the reference category (ref) at the 0.05 level or better
Source: Statistics Canada, Survey of Labour and Income Dynamics 1993, 1996, 1999, 2002, 2005.

teenage mothers and adult mothers with less than high school were more likely to be living below the LIM than adult mothers with a high school diploma (4 and 5 percentage points respectively). Likewise, women who were teenage mothers and adult mothers who completed postsecondary studies were 3 and 5 points less likely to fall below the LIM. Overall the baseline probability of living in low income was 9%.

Conclusion

Teenage childbearing has been shown to have negative and long-term effects on women's socioeconomic outcomes. Overall, teenage mothers in Canada had a lower probability than adult mothers of completing high school and postsecondary education, even after controlling for family background and other characteristics. Teenage childbearing and education are significantly related to a woman's labour market participation. In terms of labour force participation, the results suggest education matters more than family background—women with similar education had similar likelihoods of being in full-year full-time employment. Only women who were teenage mothers with a postsecondary education were more likely to be working full year full time during the reference year than women who were adult mothers with similar education. And although the mean wages for teenage mothers were lower than for women who were adult mothers, teenage mothers and adult mothers with similar education were almost equally likely to be living in low income. Furthermore, family background was no longer statistically significant for these mothers when it came to the likeli-

hood of living in low income. These results suggest that education may help counter the negative effects of teenage childbearing. However, other unobserved characteristics such as family support, social network and a variety of other resources, psychological traits, and other factors may also have an influence on outcomes.

In summary, the results from this study suggest that teenage childbearing is related to lower educational achievements, which may in turn lead to longer-term effects on labour force participation and rates of living in low income. However, teenage mothers and adult mothers with similar levels of education also had similar labour market participations and rates of living in low income—suggesting that education is more important in determining labour force participation and income in the long run.

Perspectives

■ Notes

1. Previous research has raised the endogeneity of teenage mothers as a predictor of educational attainment. Individuals intending to attain a high level of education can use preventive measures (e.g. birth control or abortion) to avoid pregnancy if they expect teenage childbearing to affect their schooling. Furthermore, high achievers may perceive their opportunity costs as education foregone if they become teenage mothers, while low achievers may not perceive any opportunity costs in education foregone given that they do not perceive education as important. Therefore, those who become teenage mothers may be those who never expected to achieve a high level of education. The perception of educational attainment may affect the probability of teenage motherhood. To correct for this endogeneity, researchers have employed instrumental variable (IV) analysis—estimating the probability of a teenage birth for each respondent in the survey with variables (instruments) correlated with the probability of a teenage birth but not with high school completion. The estimated probability is then used as a regressor in the model to estimate the probability of completing high school. Compared with the traditional analysis, which treats teenage childbearing as an exogenous variable, IV analysis finds that the teenage childbearing variable remains significant but with smaller estimated coefficients and marginal effects (Klepinger et al. 1995). In this study, teenage childbearing is treated as an exogenous variable since SLID does not lend itself to IV analysis. Consequently, results are likely to be accurate in predicting teenage childbearing as statistically significant in

explaining the probability of finishing high school and postsecondary school. However, the estimated marginal effects may be overestimated.

2. The original target population included both women and men who had been teenage parents. However, men represented only 14% of the subsample. This low proportion of men suggests possible under-reporting and selection bias. With this in mind, the study focused only on women.

3. Due to the continuous nature of the original 'age at first birth' variable, it was possible to separately analyze younger teenage mothers (age at first birth less than 18) and older teenage mothers (age at first birth 18 or 19). Although on occasion older teenage mothers had characteristics closer to those of young adult mothers (age at first birth 20 to 24), more often than not they were more similar to younger teenage mothers.

4. Birth rates from Vital Statistics are not available by ethnicity, so the teenage Aboriginal birth rate, on- and off-reserve, is unknown.

5. The Youth in Transitions Survey could be used to study the educational outcomes of teenage childbearing. However, since the survey is only in its fourth cycle it would not be possible to observe longer-term socioeconomic outcomes such as employment and income of women in their 30s.

6. Information on the area of residence of women prior to or during the completion of high school or postsecondary school is not available in SLID.

7. Some other variables were tested but subsequently dropped as not statistically significant, based on the adjusted wald-test: age in reference year; and year of childbirth. As well, years since first birth was dropped since it is highly correlated with age at first birth. The total children born to the mother was also dropped as it is available only for the reference year. In order to determine the effect on high school and postsecondary completion, the model would require the total number of children prior to high school and postsecondary completion, however, this is not available in SLID. Furthermore, other research has found that after controlling for age at first birth, educational differences by number of children become quite small and unimportant (Grindstaff et al. 1991).

8. In 2005 dollars.

9. Older mothers who had their first birth in the reference year and were not employed full year were excluded in estimating the average composite hourly earnings.

10. All figures are in 2005 dollars.

11. Older mothers who had their first birth in the reference year and were not employed full year were excluded in estimating income averages, because those on maternity leave with their first child during the reference year will likely have a lower income compared with previous years and would therefore bias the results.

12. Income was adjusted using the family equivalence scale to reflect family size and composition. For more details on the family equivalence scale, see *Data source and definitions*.

13. The logit model for low income estimated the probability of living below the LIM. Covariates were interaction between timing of motherhood and education, parental education, personal background, marital status, family-related variables, demographic characteristics, disability status, survey year, age and year of childbirth.

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Low-income children

Dominique Fleury

Childhood poverty has been the focus of more than a few studies. Some of these studies have indicated that children who experience poverty, especially persistently, are at higher risk of encountering difficulties—health problems, developmental delays and behaviour disorders—and they are also more likely to fall into low income themselves in adulthood (Kornberger et al. 2001, Finnie and Bernard 2004). The negative effects associated with poverty are inconsistent with the general opinion that all children should live in conditions that allow them to reach their full potential.

But defining and measuring poverty among children is not straightforward, not only because for the most part children do not earn any income, but also because Canada, like many developed nations, has no official definition of poverty. Even so, it does have surveys of family income that enable various measures of low income to be defined. Some analysts question the validity of family income as an indicator of children's well-being, and still wonder about the actual link between the low-income experience, especially temporary, and an increased risk of encountering problems in adulthood. However, most agree that it is unfortunate when families with children do not have a sufficiently high income for suitable housing, food, clothing or some family activities.

Using the *Survey of Labour and Income Dynamics* (SLID) and the survey that preceded it, this study looks at changes in the number, proportion and characteristics of children living in families whose income falls below various low-income cut-offs (Statistics Canada 2006). The starting point is 1989, the peak of the previous economic cycle. Since the recession of 1990/1992, Canada has enjoyed a lengthy period of expansion, which could be expected to have had a positive

impact on family incomes. However, despite sustained economic growth since the mid-1990s and the implementation of a federal program in 1998 to reduce child poverty in Canada (the National Child Benefit), the rate of low-income among children was no lower in 2004 than in 1989 (Chart). The objective of this study is to learn more about children with low-income status in Canada (see *Data source and definitions*).

Rate and severity of low income among children in 2004

According to the low income after tax cut-off (LICO-IAT), 872,000 children under the age of 18 in 2004 (or 13% of all Canadian children[1]) lived in low-income families, whose average income after tax was $21,400. On average, these families would have needed an additional $8,000 not to be considered low income.

Chart   Evolution of the rate of low income in children, working-age adults and seniors
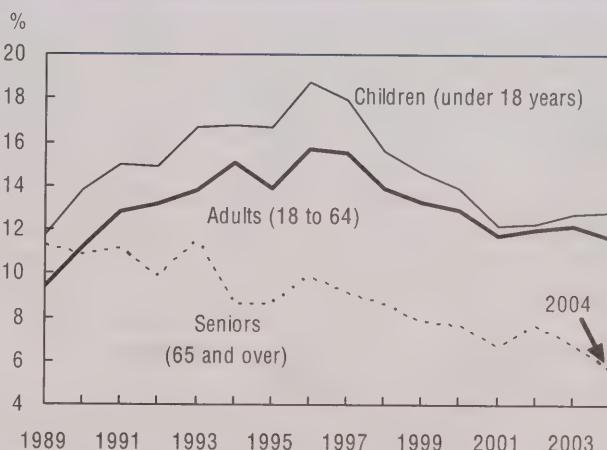
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Almost half of these low-income children lived in a situation that could be considered fairly severe since their family's income was below 75% of the low income after tax cut-off. By contrast, the average family income for children not in low-income families that year was 3.4 times higher, at $72,800.[2]

Overall, market income accounts for 80% of total income for families with children, but for only 40% among low-income families with children. The latter received a greater proportion from social assistance, child benefits and other transfers. Nevertheless, less than two in five low-income children (38%) lived in families that received social assistance in 2004, and more than four in five were able to count on some market income (85%).

Certain family characteristics increase vulnerability to low income

Family work effort and type are the factors most strongly associated with the risk of low income for children. According to specification A of the logistic regression model (Table 1), children who lived in a family whose main income recipient was not in the

labour market for most of the year were the most vulnerable to low income in 2004, followed by those whose main income recipient was unemployed or still in school. Children whose main income recipient was self-employed also had a higher risk of being in low income than those whose main income recipient was an employee. Furthermore, regardless of the main income recipient's labour market status, children from single-parent families were much more vulnerable to low income than children from two-parent families. Children who lived in families with several siblings were also more vulnerable to low income.

However, living in a two-parent family is not a guarantee against low income, since half of low-income children (51%) lived with two parents in 2004. Children's vulnerability to low income depends not only on their family type, but also on the family's work ability and effort.

More than two-thirds (68%) of all Canadian children lived in families with two income earners in 2004, compared with only one in five low-income children (21%). Although in many cases (45%) the low-income children's family type simply did not allow for the possi-

Table 1 Impact of personal and family characteristics and main income recipient on risk of low income among children

	Distribution		Specification A		Specification B	
	Low income		Estimated probability[1]	Difference with lowest	Estimated probability[1]	Difference with lowest
	Yes	No				
	%		%	% point	%	% point
Children's characteristics						
Boy	52.2	51.7	12.8	0.0	13.0	0.3
Girl	47.8	48.4	12.9	0.1	12.7	0.0
Under age 6	29.8	29.6	12.3	0.0	12.8	0.0
Age 6 to 11	36.0	32.9	13.0	0.7	12.9	0.1
Age 12 to 17	34.2	37.6	13.1	0.8	12.9	0.1
Region of residence						
Atlantic	6.2	7.0	14.7	3.2*	17.1	5.8*
Quebec	18.9	22.9	11.5	0.0	11.3	0.0
Ontario	40.8	40.5	13.2	1.7	12.5	1.2
Prairies	16.7	18.0	12.5	1.0	12.1	0.8
British Columbia	17.4	11.6	14.1	2.6	16.0	4.7*
Size of inhabited region						
Rural	5.4	14.1	5.1	0.0	5.2	0.0
Urban, population under 500,000	35.0	38.8	11.5	6.4*	11.3	6.1*
Urban, population 500,000 and over	59.6	47.1	16.4	11.3*	16.5	11.3*
Family type						
One parent	45.3	12.1	27.9	18.7*	33.5	25.0*
Two parents	51.3	85.0	9.4	0.2	8.5	0.0
Other family	3.1	2.9	9.2	0.0	12.2	3.7
One child	18.9	24.1	9.6	0.4	8.8	0.0
Two children	35.4	46.3	10.9	1.3	10.7	1.9
Three or more children	45.8	29.3	18.1	8.5*	19.4	10.6*
Main income recipient[2]						
Under age 30	15.6	7.4	19.1	8.4*	21.9	11.6*
Age 30 to 39	46.2	39.3	14.0	3.3*	14.0	3.3*
Age 40 and over	38.3	53.4	10.7	0.0	10.3	0.0
Education						
Less than high school diploma	19.5	11.2	17.8	9.2*	19.6	12.3*
High school diploma	31.6	22.3	14.3	5.7*	15.6	8.3*
More than high school diploma	36.9	39.7	12.4	3.8*	11.3	4.0*
University	11.8	26.7	8.6	0.0	7.3	0.0
Work limitations						
Yes	16.8	6.9	15.4	2.8	20.1	7.9*
No	83.2	93.1	12.6	0.0	12.2	0.0
Recent immigrant						
Yes	12.8	5.4	22.2	10.5*	26.8	15.5*
No	87.2	94.6	11.7	0.0	11.3	0.0
Aboriginal off-reserve						
Yes	8.0	4.0	16.4	3.7	17.5	4.9*
No	92.0	96.0	12.7	0.0	12.6	0.0
Main activity						
Employee	26.2	76.6	5.6	0.0	..	..
Self-employed	18.9	15.7	15.8	10.2*	..	..
Unemployed	8.4	1.9	34.3	28.7*	..	..
Student	9.0	1.2	27.2	21.6*	..	..
Not working	33.8	4.7	39.3	33.6*	..	..

* difference in predicted probability is statistically significant to a confidence level of 95%

1. Corresponds to the probability that a child with a particular characteristic would be in a low-income situation compared with another child without this characteristic, all others being equal.
2. Since the main income recipient gender variable is too closely correlated with being in a one-parent family, it has been omitted from the regressions.

Source: Statistics Canada, Survey of Labour and Income Dynamics, 2004.

bility of two income earners (e.g. single-parent families), many others lived in families in which not all the parents were employed. In particular, for more than one-third (34%) of low-income children from single-parent families, the parent did not declare any earnings, and more than 60% of low-income children from two-parent families lived in a family in which neither or only one parent declared earnings.

Moreover, parents' labour market participation does not always protect children from low income. In 2004, more than 40% of low-income children lived with at least one parent who declared a significant work effort (i.e. worked at least 910 paid hours during the year), and more than 20% lived in families with at least two earners.

Parents' work does not always protect children from low income because some parents have working conditions that do not enable them to meet their family's financial needs. Low-income children's parents who worked in 2004 had less favourable working conditions than other workers. They worked fewer hours (500 fewer),[3] were more likely to be self-employed (33% versus 16%), and had atypical work schedules (33% versus 25%). In addition, chances were much higher that they earned less than $10 per hour (49% versus 4%), had non-unionized jobs (85% versus 63%) or had jobs that did not offer additional benefits such as a dental or supplementary health plan (61% versus 17%).

In addition to family work effort, parents' working conditions and family type, some parents' personal characteristics are associated with a greater vulnerability of children to low income. Children dependent mainly on one parent with at the very most a high school diploma, who was under the age of 30, a recent immigrant, an Aboriginal person living off-reserve or who had limitations at work were at higher risk of having low family incomes in 2004.[4] However, the association between low income and the last two characteristics was statistically significant only when the main income recipient's labour market status was omitted from the model (Table 1, specification B). This means that these characteristics affect family income through their influence on labour market participation. However, in the absence of information on parents' labour market status, children who depend primarily on one parent with a limitation at work or of Aboriginal origin were at higher risk of low income. The three other characteristics (being of recent immigrant status, having no more than a high school

diploma, or being under the age of 30) were associated with low income for children even when the main income recipient's labour market status was taken into consideration, but to a lesser degree.

A third model specification was also used to capture the effect of the total family work effort. It indicated that family work effort is the best predictor of low income for children. Its effect was even more significant than the labour market status of the family's main income recipient or the family type. Children who lived in families with no earners were at the greatest risk of low income. In fact, their probability of living in a low-income situation was 71% in 2004. By contrast, the probability of low income among children who lived in a family whose main income recipients declared not being in the labour force for most of the year was 39%. Furthermore, this specification showed that children in families with one earner (single-parent family or not) were more likely to live in low income (23%) than children who could count on the economic support of two parents (5%).

To date, the association between children's place of residence and the risk of being in a low-income situation has not been analyzed. Given that the LICO-IAT does not control for differences in the cost of living in different communities of the same size in Canada, it is difficult to establish a firm link between the region of residence and the probability of low income among children.

Using LICO-IAT suggests that children who lived in rural areas were much less at risk of belonging to low-income families in 2004 than children in large cities (their estimated low-income probabilities were 5% and 16% respectively). However, with the market basket measure, which accounts for differences in the cost of living across communities, children's vulnerability to low income was very similar whether they lived in rural or urban areas (16% versus 17%).

Furthermore, with the LICO-IAT, only children in the Atlantic provinces stood out as being at slightly higher risk of low income compared with children elsewhere in Canada. However, the market basket measure revealed more significant provincial differences in the vulnerability of children to low income. For example, children in British Columbia were the most likely to be in a low-income situation in 2004 (their low-income probability was estimated at 23%), followed by children in the Atlantic provinces (20%). Children in Quebec were the least vulnerable (8%).

Table 2 Evolution of the severity of situation of low-income children

	Low income			Not low income
	Income[1]	Differ-ence[2]	Severe situation[3]	Income[1]
	2004 $	%	%	2004 $
1994	20,200	29.6	52.5	60,200
1995	19,700	30.3	53.3	60,600
1996	20,000	29.3	50.3	61,300
1997	20,100	29.8	50.7	62,500
1998	20,300	29.2	51.5	63,900
1999	20,600	28.4	47.4	65,500
2000	21,300	27.0	43.1	68,400
2001	20,500	28.3	47.9	70,100
2002	20,700	28.2	49.1	70,000
2003	20,700	28.1	46.5	70,400
2004	21,400	27.7	48.3	72,800

1. After tax.
2. The formula used to calculate the difference in income for each low-income child is the following: 1-(family income after transfers and tax ÷ low-income cut-off after tax).
3. Family income after transfers and tax for low-income children is below the 50% low-income cut-offs associated with their family.
Source: Statistics Canada, Survey of Labour and Income Dynamics.

between the family income of low-income children and their low-income cut-off was 30% in 1994, slightly but not statistically different than the gap 10 years later (28% in 2004) (Table 2). The proportion of low-income children in severe low income was 53% in 1994, slightly higher than the 2004 rate (48%). However, the average family income difference between low-income children and other children was greater in 2004 than in 1994 ($51,400 compared with $40,000).[6] This increase in income inequality seems to be due to a significant increase in the family income of children not living in a low-income situation during this period—more specifically, a major income increase for families at the highest end of the income distribution—rather than an income decline for economically disadvantaged families.

Income taxes and transfers play an important role in reducing low income

Every year between 1994 and 2004, the redistribution of income through income taxes and transfers helped reduce the rate and severity of low income for children. Comparing market income, rather than income after tax and transfers, with the Statistics Canada low income after tax cut-off, shows that 22% of children, rather than 13%, would have had low-income status in 2004 (Table 3)—i.e. an additional 584,000 children

Since the market basket measure is more specific in determining differences in the cost of living across Canada, it should generally be more effective in identifying the impact of the region of residence and its size on the rate of low income among children.

Changes in low income among children in the past few years

From 12% in 1989, low income among children steadily increased to a peak of 19% in 1996, before declining to 12% in 2001. Since then, it has remained fairly stable despite sustained economic growth.[5] Furthermore, the severity of low income among children remained fairly stable between 1994 and 2004. The average difference

Table 3 Low income in children, comparing low-income cutoffs after tax, with market income or income after tax

	Rate		Number of children		Difference	
	Market income	Income after tax and transfers	Market income	Income after tax and transfers	Market income	Income after tax and transfers
	%		'000		%	
1994	25.1	16.8	1,753	1,174	63.5	29.6
1995	25.0	16.7	1,753	1,171	63.9	30.3
1996	28.0	18.7	1,968	1,319	61.4	29.3
1997	26.6	17.9	1,871	1,260	61.4	29.8
1998	24.8	15.6	1,737	1,093	60.3	29.2
1999	22.9	14.6	1,596	1,015	58.4	28.4
2000	21.5	13.9	1,491	967	57.0	27.0
2001	21.5	12.2	1,484	844	55.8	28.3
2002	22.1	12.3	1,519	849	53.6	28.2
2003	21.7	12.7	1,480	867	54.8	28.1
2004	21.5	12.9	1,456	872	53.9	27.7

Source: Statistics Canada, Survey of Labour and Income Dynamics.

Cross-sectional analysis

To estimate the impact of certain characteristics on the risk of low income among children in 2004, a logistic regression model was used. The binary dependent variable had a value of 1 if the child lived in a low-income family in 2004, 0 otherwise.

Explanatory variables covered children's personal characteristics, as well as family and main income recipient characteristics. Given the important interactions between different explanatory variables of interest, different specifications were estimated.

Specification A included all the children's personal characteristics, as well as the characteristics of their family and the main income recipient, *including labour market status*. This regression was used to determine the importance of the association between the labour force attachment of the family's main income recipient and the risk of low income. However, the effects of a number of other characteristics were reduced, since they are partly captured through the impact they have on the labour market status of the main income recipient.

Specification B included all the children's personal characteristics, as well as the characteristics of their family and the main income recipient, *excluding labour market status*. This regression was used to determine the direct association between several characteristics that affect labour market status and then the risk of low income.

Specification C included all the children's personal characteristics, as well as the characteristics of their family and the main income recipient, *excluding labour market status but including total family work effort*. Given that family type (single-parent, two-parent or other) and the main income recipient's labour market status (employee, self-employed, unemployed, student, not working) are too strongly correlated to the total family work effort, these two variables had to be excluded from the model in order to see to what extent the total number of income earners in the family was associated with low income.

Since the coefficients estimated using Logit are not easy to interpret (due to the non-linear nature of the Logit-type function), the predicted probabilities were derived from the coefficients estimated for each selected model specification. Only those probabilities derived from estimated coefficients significantly different from zero (with a 95% confidence level) were discussed.

in the absence of income redistribution. Moreover, the low-income gap would have been 54% in 2004, rather than the observed 28%.

Every year since 1994, income taxes and transfers reduced the rate of low income for children by eight or nine percentage points. However, their impact on low-income severity in 2004 was less than it had been 10 years earlier. Taxes and transfers reduced the low-income gap by an average of 26 percentage points in 2004 compared with 34 in 1994.

Every year, government transfers represented a significant proportion of the after-tax income of low-income families with children—between 59% and 67%. However, the source of these transfers evolved significantly between 1994 and 2004. Since 1999, the most important source has been child benefits (federal and provincial), whereas in previous years,

social assistance represented the biggest portion of transfer income. More specifically, 36% of the income of low-income families with children in 1994 was from social assistance, while 16% came

from child benefits. Ten years later, these proportions were practically reversed, with 31% of their family income coming from child benefits and 17% from social assistance (Table 4).

Table 4 Income components after transfers and tax for low-income families with children

	Income	Net market income	Social assistance	Employment Insurance	Benefits for children	Other transfers
	2004 $			%		
1994	18,900	35.5	35.8	6.3	16.0	6.3
1995	18,500	34.9	36.4	5.9	15.9	6.8
1996	18,700	33.5	36.2	3.8	18.3	8.1
1997	18,500	33.7	33.1	3.9	20.0	9.2
1998	18,500	32.9	29.8	4.1	25.1	8.2
1999	19,000	35.7	25.8	2.3	27.0	9.2
2000	19,200	38.0	22.4	2.8	28.2	8.6
2001	18,700	34.8	23.0	2.4	30.1	9.6
2002	18,900	37.9	21.2	2.9	30.2	7.7
2003	19,300	38.1	20.4	3.7	29.8	8.1
2004	19,700	40.8	16.7	3.5	31.1	7.6

Source: Statistics Canada, Survey of Labour and Income Dynamics.

Adding up all the low-income gaps indicates that a total of $3.3 billion in additional income (from market income, transfers or other sources) would have been required for all low-income families with children to move above the low-income thresholds in 2004.

Children no more likely to be in a family vulnerable to low income in 2004 than in 1989

Many factors can make the rate of low income in children vary over time, including changes in the economy, government interventions, and changes in population composition. Regression analyses using 2004 data have revealed that some family characteristics are associated with a higher risk of low income for children. If the proportion of children in families with characteristics strongly associated with low income grows, then a greater proportion of all children will be vulnerable. This type of trend could mitigate the impact of economic growth and government interventions on low income among children. However, this does not seem to have been the case between 1989 and 2004.

In fact, the distribution of children based on certain characteristics identified as low-income risk factors precludes the conclusion that children were more likely to be in a family at high risk of low-income in 2004 than in 1989 (Table 5). On the one hand, they were more likely to be in a single-parent family or in a family whose main income recipient was a recent immigrant. On the other hand, fewer depended on a main income recipient under the age of 30 with less than a high school diploma. The rate of low income for children based on their family characteristics also evolved

Table 5 Children's family and main income recipient's characteristics and low income rate among children

	1989		2004	
	Children	Rate of low income	Children	Rate of low income
	'000	%	'000	%
All children	**6,684.8**	**11.7**	**6,784.1**	**12.9**
Family			%	
Two parents	85.5*	7.0	80.8*	8.2
Single parent	12.2*	44.0*	16.3*	35.7*
Other family type	2.4	15.8	3.0	13.6
0 income earners	4.6	84.0*	4.0	78.8*
1 income earner	25.1	19.6*	24.5	26.1*
2 or more income earners	70.2	4.1	71.5	4.6
1 or 2 children	68.8	11.0	68.6	10.2
3 or more children	31.2	13.2*	31.4	18.7*
Main income recipient				
Under age 30	13.1*	25.7	8.4*	23.9
Less than a high school diploma	27.8*	21.5	12.2*	19.6
Recent immigrant	6.7*	22.6*	9.4*	26.1*

* the estimates are statistically different between 1989 and 2004
Source: Statistics Canada, Survey of Consumer Finances, 1989; Survey of Labour and Income Dynamics, 2004.

little during this period. While it grew for children of recent immigrants and children in families with one income earner and three or more children, it fell for children in families with no income earners and children in single-parent families.

For many children, low income is a transitory situation

A snapshot of low income children for one year does not provide a complete picture of the situation. Indeed, several consecutive years of data provide additional useful information. For instance, the proportion of children affected by low income over a six-year period is

much higher than in a single year. Of the children under age 13 in 1999, 22% experienced low income at least one year between 1999 and 2004, compared with just 12% in 1999. But the longer time frame also reveals that a small proportion of children are in a persistent low-income situation. Between 1999 and 2004, 3% of children under age 13 in 1999 (or just less than 100,000) were in a low-income situation for all six years (Table 6).

Low income among children is a very dynamic phenomenon. The majority of children living in low income do not remain in that situation continuously, nor are children not in low income necessarily exempt from it. From 1999 to

Table 6 Persistence of low income

	'000	%
All children		
In 1999	486.1	12.3
At least 1 year	878.6	22.3
Every year	98.9	2.5
Persistent[1]	275.2	7.0
After at least 1 year		
in low income		
Only 1 year	317.9	36.2
2 years	185.9	21.2
3 to 4 years	190.9	21.7
5 to 6 years	183.9	20.9
Persistent[1]	275.2	31.3

1. Annual family income cumulated over
   several consecutive years is below the
   low-income cut-offs in the same period.
Source: Statistics Canada, Survey
         of Labour and Income Dynamics,
         1999 to 2004.

2004, between 2% and 4% of children not in low income in a given year fell into it the following year. But between 28% and 46% of children in a low-income situation in a given year climbed out the following year.[7] However, approximately 30% of children who escaped low income between 1999 and 2000 re-entered it before 2005.

For children, entry into and exit from low income can be explained by changes in their family situation or their parents' labour market situation. Approximately 2% of children from 2003 fell into low income in 2004. For 42% of these children, the main reason was a change in their family environment (for example, parental separation or a new sibling); for 27%, it was mainly due to a lower employment income for the main income recipient; and for 31%, it resulted from a reduction in family income from other sources (transfers, second earner, etc.).

The main reasons behind children escaping low income are also interesting. Of the 28% of children in low income in 2003 but not in 2004, 20% escaped mainly due to a change in their family environment (for example, a new spouse for the parent or the departure of a sibling). The main reason for others was an increase in the income of their family members (50% due to an earnings increase for the main income recipient, and 29% from an increase in the family income from other sources).

Of all the children under 13 in 1999 who experienced low income for at least one year between 1999 and 2004, the average time in this situation was 2.7 years, or just under half of the study period. More than 30% of them experienced persistent in low income and 43% experienced low income from three to six years between 1999 and 2004, which represents a significant part of their childhood.

Only a few factors help predict persistence of low income for children

Of all the children in a low-income situation in 1999, only those whose main income recipient was not in the labour market, was 30 years of age or older or had at most a high school diploma had a significantly higher risk of persistent income (Table 7). For example, the risk of persistent low income when the main income recipient was not in the labour market in 1999 was more than 60%, while it varied between 22% and 24% for low-income children whose parent was either self-employed or an employee. While a parent's self-employment seems to be a determining factor of low income among children in a given year, it is

not associated with persistent low income. The same can be said for children in a single-parent family. In fact, the probability of persistent low income for children is similar for those in a single-parent (40%) or two-parent (45%) family, whereas in a given year, children in single-parent families are clearly at higher risk of low income. And low-income children whose main income recipient was under the age of 30 were at lower risk of persistent low income than those whose main income recipient was older, while for the risk of low income in a given year, the opposite was true (Tables 1 and 7).[8]

Conclusion

The proportion of children under the age of 18 living in a low-income family was virtually the same in 2004 as in 1989, despite the steady economic growth since the 1990-1992 recession. More than 12% of children lived in a low-income family in 2004, and more than 22% of children experienced an episode of low income between 1999 and

Longitudinal analysis

To estimate the impact of certain characteristics on the risk low-income children in 1999 had of experiencing persistent low income between 1999 and 2004, another logistic regression model was used. In this model, the binary dependent variable had a value of 1 if the low-income child in 1999 experienced persistent low income between 1999 and 2004, 0 otherwise.The explanatory variables were the same as those in specification A for the cross-sectional analysis, except some had to be categorized differently (e.g. variables on age and the education level of the main income recipient), given the limited number of observations.

Table 7 Impact of characteristics of low-income children under 13 years in 1999 on their risk of persistent low income

	Distribution of low-income children in 1999	Estimated probability of persistent low income from 1999 to 2004
	%	
All children	**100.0**	**41.5**
Boy	54.2	40.7
Girl	45.9	42.3
Under age 6	40.7	42.2
Age 6 to 12	59.3	42.1
Province		
Atlantic	10.9	48.8
Quebec	25.2	40.9
Ontario	31.8	34.6
Prairies	21.3	54.5
British Columbia	10.8	35.9
Region		
Rural	7.1	45.0
Urban, population under 500,000	38.1	48.8
Urban, population 500,000 and over	54.9	37.1
Family type		
Single parent	55.7	39.9
Two parents	41.3	44.6
Other family	F	F
One child	14.0	39.3
Two children	36.2	49.6
Three or more children	49.8	37.7
Main income recipient		
Under 30 years	23.6	33.5
30 years and over	76.4	44.8*
Educational level completed		
High school diploma	54.3	55.2*
More than a high school diploma	45.7	27.9
Work limitations		
Yes	10.9	49.5
No	89.1	42.0
Recent immigrant		
Yes	15.1	62.9
No	84.9	38.7
Aboriginal off-reserve		
Yes	5.8	58.1
No	94.2	41.3
Main activity during the year		
Employee	26.2	24.3
Self-employed	18.0	21.7
Unemployed	F	F
Student	8.6	53.1
Not working	42.7	60.8*

* difference in predicted probability is statistically significant to a confidence level of 95%
Source: Statistics Canada, Survey of Labour and Income Dynamics, 1999 to 2004.

2004. Children who experienced an episode of low income remained in this situation on average for almost half (2.7 years) of the 1999 to 2004 study period.

Furthermore, the severity of low income for children was the same in 2004 as 10 years prior, and since the economic situation of the well-off children in Canada improved significantly in the past decade, income inequality widened.

Family situation and parents' lack of employment are the factors that most influenced children's vulnerability to low income. While children in single-parent families were clearly more vulnerable to low income, those in two-parent families were not exempt from it. In 2004, more than half of low-income children lived in a two-parent family. Whether children were part of single- or two-parent families, their parents' labour market situation was a key determining factor in the risk of getting into a low-income situation. Children in families with no workers were the most vulnerable to low income, while those with one parent working were more vulnerable than those with both parents working. However, even parents' substantial work effort does not always protect children from low income if salary or working hours are insufficient.

Low income for children is a very dynamic phenomenon in Canada. Many children experience low income, but few remain in that situation for several consecutive years. In addition, in the last decade, income taxes and transfers have played an important role in reducing the rate and severity of low income among children. However, despite sustained economic growth and a significant increase in child benefits, many children remain in that situation in Canada. In 2004, low-income families with children would have needed more than $3 billion in additional income (from market income, transfers or other sources) to surpass low-income cut-offs.

Perspectives

■ **Notes**

1. Since the publication of Income in Canada: 2004, some minor changes have been made to the Survey of Labour and Income Dynamics data. These changes may slightly affect the number of children identified as being in a low-income family using LICO-IATs. As a result, the estimates of the number of low-income children that appear in the most recent Statistics Canada publication (877,000 according to the LICO-IATs) differ slightly from the estimates in this study (872,000).

2. The median family income of children not living in a low-income situation ($62,700) was significantly lower than their average income; however, this is not the case for low-income children ($20,600). This suggests that the average family income of children from financially well-off families was probably biased upward by very high income levels. Despite this difference, the median family income of children not living in a low-income situation was three times higher than that of low-income children.

3. It is not possible to determine whether the fewer working hours result from unfavourable labour market conditions or a lower work effort.

4. It is not possible to determine whether the greater vulnerability to low income of recent immigrants, individuals with work limitations and Aboriginal persons can be attributed to discrimination rather than to other characteristics not observed in the data.

5. The low income rates of 12.2% in 2001 and 12.9% in 2004 are not statistically different. After this study began, the 2005 and 2006 low-income data were published and showed that the rate of low income among children in 2005 was 11.7%, which equals the unrevised 1989 rate. Revisions to the 1989 data would likely raise the rate of low income that year only slightly, not enough to make it significantly different from the 2005 rate.

6. This statement is also true for income adjusted to take family size into account, when a purely relative measure is used (LIM-IAT) to identify low-income children, and when the median rather than the average income is compared, although in the latter case, the difference is smaller.

7. Even though the annual exit rates are much higher than the entry rates, it does not necessarily mean that fewer children live in low income every year. The entry rate into low income is the proportion of children who did not live in a low-income situation in a given year, but did the following year, while the low-income exit rate is the proportion of children who lived in a situation of low income in a given year, but did not the following year. Since different denominators are used, even if the exit rate seems higher than the entry rate, the absolute number of people who escape low income is not necessarily higher than the absolute number of people entering low income. For example, between 2003 and 2004, the 2.3% entry rate corresponded to 84,000 children, while the exit rate of 28.4% equalled 99,000 children.

8. While few characteristics are associated with significant persistent low income, it is perhaps due to the small number of observations available for analysis. Among other things, the results lead one to believe that recent immigrant status is positively associated with persistent low income for children.

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What's new?

Recent reports and studies

■ From Statistics Canada

■ *Community vulnerability to population and employment decline*

Over the last two decades, one of the most important factors of change for Canadian communities has been the process of global economic integration.

Globalization has opened new economic opportunities for various sectors, such as the primary resource sector. However, the economies of regions relying on these sectors have become more vulnerable to declines in population and employment in the wake of foreign competition. Indeed, 1 in every 5 communities in Canada are vulnerable to a loss of population, and about 1 in 20 are vulnerable to a decline in employment.

The most vulnerable communities are in regions characterized by a steady and constant loss of population over the past two decades—the Prairies, northern Ontario, northern Quebec and the most remote regions of Atlantic Canada.

For more information, see the April 14, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ *Earnings inequality and earnings instability of immigrants*

Instability in earnings for immigrants usually declines substantially after several years in Canada. This is consistent with the view that during their first years in Canada, immigrants move more frequently from one job to another, or have part-time or temporary jobs. As they gain Canadian experience, immigrants are likely to find more stable employment.

Based on their earnings in the four years after landing, the earnings instability of immigrants who came to Canada between 1998 and 2000 was substantially higher than the earnings instability of those who arrived between 1980 and 1982. It was also higher than the earnings instability of those who came between 1983 and 1985.

Business cycles also had an impact on earnings instability for immigrants. While instability generally decreased during the first several years in Canada, it rose rapidly during the recession years in the early 1990s and fell in subsequent years.

Earnings inequality rose among recent immigrants over the last two decades. Although foreign education, the ability to speak one of the official languages and birthplace account for a large part of immigrants' earnings inequality (up to 44% depending on the cohorts considered), much remains unexplained.

For more information, see the April 9, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ *Income security in retirement among the working population*

On average, Canadian workers at age 75—when most are retired—had family disposable incomes that were 80% of their incomes at age 55, when they were working. However, the extent to which they maintained their income in retirement varied with the level of income.

Disposable incomes for wealthier Canadian workers declined significantly after they headed into the retirement years, but those with low incomes encountered relatively little change.

Among workers with average incomes at age 55, family disposable income fell after age 60, declined until 68, then stabilized at about 80% of their income level at 55.

Lower income workers (those in the bottom 20% of the income distribution) experienced little change in income as they moved from age 55 through their retirement years. This was largely because of the income maintenance impact of the public pension system.

For more information, see the March 10, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ *Employment growth among lone mothers in Canada and the United States*

Employment rates and earnings among lone mothers rose by virtually identical magnitudes in Canada and the United States between 1980 and 2000, but for different reasons.

During the 20-year span, employment rates of single mothers rose by 12 percentage points in Canada and by 13 points in the United States. Earnings of all single mothers increased by almost 40% in both countries.

In Canada, employment and earnings improved mostly because of demographic change. That is, these women were much better educated and significantly older in 2000 than their counterparts in 1980, and gains in aggregate employment and earnings reflected this. Two-thirds of the employment gains were associated with change in these demographic characteristics.

In the United States, changes in these demographic variables were less important, accounting for less than one-third of the overall employment gains over a similar period. Most of the gain was associated with changing labour market behaviour and unmeasured variables.

For more information, see the March 7, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ *Income of Canadians*

Median family income (pre-tax) increased by 11.1% (in constant dollars) between 1980 and 2005. As a result of strong economic growth fostered by gains in employment, a further 2.1% increase was observed between 2005 and 2006. At the same time, government transfers also increased, leading to a similar increase in after-tax family income.

Families had an estimated after-tax median income of $58,300 in 2006, up 2.1% from 2005 in real terms. It was the third consecutive annual increase. In 2006, the increase was mainly the result of gains in both market income and government transfers.

The gain in after-tax income was shared by most family types, including senior families (the main income earner aged 65 or over), and younger, working-age families. Senior families had a median after-tax income of $42,400, up 2.9%. Working-age families had a median of $62,000, a 1.8% gain.

Both senior and working-age family median after-tax income increased by roughly 18% in real terms since 1996.

Persons living alone (unattached individuals) had a median after-tax income of $22,800 in 2006, up 4.6% from 2005.

For more information, see the May 5, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ *How families respond to layoffs*

Married women in at least some Canadian families were able to adjust to their husband's layoff by increasing their own employment income during the 1990s.

One set of families—those that had no children aged 15 or over—appeared to have adjusted partially to the layoff of the husband through an increase in the wife's employment income. Five years after the husband's layoff, the increase in the wife's earnings offset about one-fifth of the loss experienced by the husband.

Husbands in these families experienced earnings losses that averaged $12,200 (in 2002 dollars). However, wives increased their earnings by roughly $2,700, somewhat mitigating the income loss.

For more information, see the February 21, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.ca).

■ From other organizations

■ *Driving forces of the Canadian economy*

This paper analyzes the Canadian economy for the post-1960 period, using an accounting procedure developed in Chari, Kehoe, and McGrattan (2006), which identifies factors that help align the predictions of the neoclassical growth model with the observed macroeconomic variables. Total factor productivity and the consumption-leisure trade-off (productivity and labour factors) are found to be key to understanding the changes in output, labour supply and labour productivity observed in the Canadian economy.

A decomposition of the labour factor for Canada and the United States shows that the decline in the gender wage gap is a major driving force for the decrease in labour market distortions. Moreover, the milder reduction in labour market distortions observed in Canada is due to a relative increase in effective labour taxes in Canada. See *Driving Forces of the Canadian Economy: An Accounting Exercise* by Simona E. Cociuba and Alexander Ueberfeldt, Working Paper 2008-14, May 2008, Bank of Canada.

Understanding productivity

This extensive review of the rapidly expanding research on productivity, both at the macro and micro levels, focuses primarily on Canadian papers, but also draws on selected studies from other countries, especially the United States, where such work sheds important light on particular aspects of productivity growth. Key results of the studies and the important methodological features that underpin those results are highlighted along with areas for further research. See *Understanding Productivity: A Review of Recent Technical Research* by Richard Dion and Robert Fay, Discussion Paper 2008-3, February 2008, Bank of Canada.

A Wave of protectionism?

Given the U.S. current account deficit, pressure is high on Asian countries to revalue their currencies. Calls from some U.S. policymakers for tariffs on imports from China have sparked fears of a world-wide surge in protectionism. This study evaluates the risk of protectionism, considering the economic effects of tariffs and the incentives for policymakers to adopt tariffs. Following the political economy literature, the paper distinguishes 'benevolent' policymakers—who care about long-term GDP—and 'myopic' policymakers, for whom short-term considerations are important.

An analysis of the economic effects using the Bank of Canada's Global Economy Model shows that the gains from import tariffs are small: in the short-term, tariffs raise the price of imports and shift consumption toward domestically produced goods; but they also lead to a real appreciation. This improves the terms of trade, but falling export volumes lead to a reduction in GDP in the long run. In the political dimension, the paper concludes that a 'benevolent' policymaker would not adopt tariffs, because of negative long-term economic consequences, but 'myopic' policymakers might be tempted to exploit short-term political gains. Given the potentially high costs of protectionist trade policies, protectionism is viewed as an important risk. See *A Wave of Protectionism? An Analysis of Economic and Political Considerations* by Philipp Maier, Working Paper 2008-2, January 2008, Bank of Canada.

Minority self-employment in the United States

Changes in self-employment have occurred since the early 1980s in the United States. Random samples of approximately twenty million US workers are examined from the Basic Monthly files of the CPS (BMCPS), the 2000 Census and the 2006 American Community Survey (ACS). In contrast to the official definition of self-employment, which simply counts the unincorporated self-employed, the paper also includes the incorporated self-employed. The paper presents evidence on trends in self-employment for the US by race, ethnicity and sex.

Evidence is also presented for construction, which has self-employment rates roughly double the national rates and strikingly high racial and male/female disparities in self-employment rates. The construction sector is also important given the existence of public-sector affirmative action programs at the federal, state and local levels directed at firms owned by women and minorities. Disparities between the self-employment rates of white men and white women and minorities in construction narrowed in the 1980s, widened during the 1990s after the US Supreme Court's decision in Croson but then narrowed again since 2000 after several legal cases that found such programs constitutional. Despite this, substantial disparities remain, particularly in earnings.

The paper also finds evidence of discrimination in the small business credit market. Firms owned by minorities in general and blacks in particular are much more likely to have their loans denied and to pay higher interest than is the case for white males. This is only partially explained by their lack of creditworthiness and is consistent with a finding of discrimination in the credit market by banks. See *Minority Self-Employment in the United States and the Impact of Affirmative Action Programs* by David G. Blanchflower, NBER Working Paper No. 13972, April 2008, National Bureau of Economic Research.

Obesity, disability, and the labour force

Men of prime working age have increased their non-employment rates over the past 30 years. At the same time, disability rates have also increased despite a backdrop of generally improving health in the U.S. population. However, obesity has increased substantially over this period. The paper finds that changes in the characteristics of male workers—including age, race, ethnicity, and obesity levels—can explain a large portion (around 40%) of the increase in non-employment. See "Obesity, disability, and the labor force" by Kristin F. Butcher and Kyung H. Park, *Economic Perspectives*, issue Q I, 2008, Federal Reserve Bank of Chicago.

In the works

Some of the topics in upcoming issues

■ Profile of the Canadian armed forces

The socio-demographic and occupational characteristics of the Canadian military, with a comparison of the prevalence of work stress, as well as social and psychological well-being among service members and the general working population.

■ Work–life balance among shift workers

Shift workers play an important role in an economy that demands goods and services 24/7. This paper examines the time-use patterns and work-life balance of Canada's shift workers.

■ Change in wealth of Canadians

The wealth situation of the young, elderly and those in their peak earnings span of life cycle.

■ Parental benefit claim patterns

The use of parental leave by fathers and its impact on family and workplace dynamics and how both mothers and fathers are making use of the additional 25 weeks of parental benefit.

■ Wages of older workers

With the aging of the baby-boomers, age-earnings profiles will be of even more importance in forecasting future pension benefits payout.

■ Remittances by recent immigrants in Canada

A look at the characteristics of immigrants who send money back to relatives, as well as the incidence of remitting and the amounts remitted by immigrants from a wide range of countries.

■ Employment in the trades

An analysis of employment trends in selected trade occupations using socioeconomic and job characteristics.

■ Job quality

An examination of recent contrary employment trends in "well-paid" manufacturing and "low-paid" retail trade.

■ Immigrants: Still settling for less?

Despite their higher education level, immigrants continue to be over-represented in low-skilled jobs and to have lower earnings than Canadian-born workers.

Varia

In this issue: Provincial labour force differences by level of education; Work absence rates

CONTACTS

Administrative data
Small area and administrative data
Customer Services
613-951-9720

Business surveys
Annual Survey of Manufactures and Logging
Client Services
613-951-9497

Annual surveys of service industries
Client Services
613-951-4612

Business Conditions Survey of Manufacturing Industries
Claude Robillard
613-951-3507

Census
Labour force characteristics
Sandra Swain
613-951-6908

Income statistics
Eric Olson
613-951-0220

Employment and income surveys
Labour Force Survey
Marc Lévesque
613-951-4090

Survey of Employment, Payrolls and Hours
Sylvie Picard
613-951-4003

Employment Insurance Statistics Program
Gilles Groleau
613-951-4091

Major wage settlements
Workplace Information Directorate
(Human Resources and Social Development Canada)
819-997-3117 or 1 800 567-6866

Labour income
Anna MacDonald
613-951-3784

Survey of Labour and Income Dynamics
Survey of Financial Security
Survey of Household Spending
Client Services
613-951-7355 or 1-888-297-7355

General Social Survey
Education, Work and Retirement
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Time Use
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613-951-5979

Pension surveys
Pension Plans in Canada Survey
Bruno Pépin
613-951-4023

Quarterly Survey of Trusteed Pension Funds
Gregory Sannes
613-951-4034

Special surveys
Adult Education and Training Survey
Client Services
613-951-7608 or 1 800 307-3382

National Graduates Survey
Client Services
613-951-7608

Provincial labour force differences by level of education

Canada is a diverse country. Its ten provinces and three territories are endowed with varying natural resources and have developed their own industrial infrastructures and labour markets. Nevertheless, education is always a major factor in the ability to find a job.

This issue of *Perspectives on Labour and Income* launches a series examining key labour market indicators by education and province for 1990 and 2006. The variables covered include sex, age, full-/part-time work, occupation, industry, multiple job holdings, hours worked, and earnings. The objective is to provide a better understanding of how provincial economies utilize workers with different levels of education.

Nearly half of 26.2 million persons aged 15 or older had completed postsecondary education in 2006 compared with one-third of 21.2 million in 1990. The proportion with postsecondary education increased not only because more young people are proceeding to higher education, but also because of the relatively larger intake of immigrants with higher education and skills. Of the additional working-age population between 1990 and 2006, 84.5% had postsecondary education.

Nearly half of the increased working-age population between 1990 and 2006 had a community college certificate or diploma

Above bachelor degree
11.6%

Completed high school
15.5%

Bachelor degree
26.7%

College certificate/diploma
46.2%
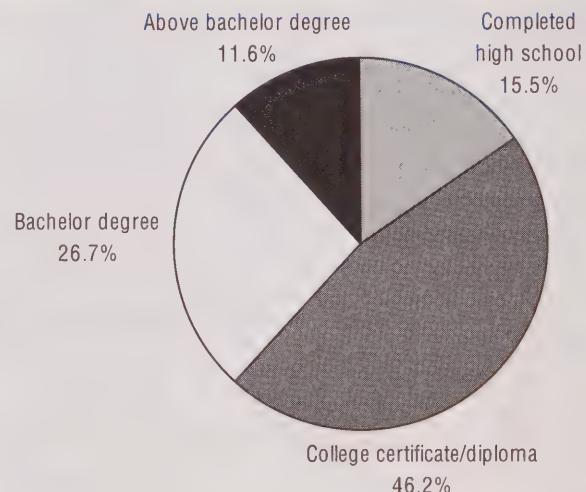
Source: Statistics Canada, Labour Force Survey.

In both 1990 and 2006, the proportion with a university degree was highest in Ontario, followed by Alberta and British Columbia, and lowest in New-foundland and Labrador. Some of the growth in the proportion of degree holders in the first three provinces could be attributed to their relatively larger intake of immigrants (who are selected on the basis of education and skills). Persons with less than postsecondary education constituted the largest group in each province. In 1990, Prince Edward Island led the rank-ing at 72.2%, while Nova Scotia trailed at 64.3%. By 2006, the proportion had dropped, the rakings had changed and the range had widened—Manitoba led with 58.3% and Quebec trailed at 48.8%. At the same time, the range in the proportion of university degree holders rose from 6.9 points to 10.4 points, indicating that the education differential between provinces in-creased over the 1990 to 2006 period.

Working-age population by education and province

	Population 15 and over	Less than postsecondary			Completed postsecondary			
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	Bachelor's degree	Advanced degree
	'000				%			
1990								
Canada	**21,214.7**	**67.3**	**37.8**	**29.5**	**32.7**	**21.8**	**7.5**	**3.3**
Newfoundland and Labrador	439.8	71.6	48.5	23.1	28.4	22.6	4.0	1.8
Prince Edward Island	98.1	72.2	48.3	23.9	27.8	21.0	4.9	1.9
Nova Scotia	697.0	64.3	42.4	21.8	35.7	25.6	6.9	3.3
New Brunswick	569.1	71.1	44.3	26.9	28.9	21.1	5.6	2.2
Quebec	5,457.0	68.1	43.4	24.8	31.9	22.6	6.5	2.7
Ontario	7,960.0	66.8	35.8	31.0	33.2	20.5	8.6	4.1
Manitoba	824.2	71.8	41.9	29.9	28.2	18.3	7.0	2.9
Saskatchewan	733.8	71.0	42.0	29.1	29.0	21.0	6.0	2.0
Alberta	1,889.8	64.6	32.0	32.6	35.4	23.6	8.5	3.2
British Columbia	2,545.9	65.6	29.2	36.4	34.4	23.4	7.7	3.4
2006								
Canada	**26,185.1**	**51.2**	**23.2**	**28.0**	**48.8**	**29.9**	**13.2**	**5.8**
Newfoundland and Labrador	427.7	56.7	30.8	26.0	43.3	32.5	7.3	3.5
Prince Edward Island	112.3	54.1	28.3	25.8	45.8	31.9	9.7	4.2
Nova Scotia	762.8	51.5	26.6	24.9	48.5	32.3	11.5	4.7
New Brunswick	611.3	55.9	27.1	28.8	44.1	30.6	9.9	3.7
Quebec	6,251.5	48.8	26.5	22.3	51.2	33.8	12.6	4.8
Ontario	10,229.0	50.1	21.6	28.6	49.9	28.6	14.3	7.0
Manitoba	892.0	58.3	27.1	31.2	41.7	25.7	12.1	4.0
Saskatchewan	746.4	57.6	26.9	30.7	42.4	28.3	10.7	3.4
Alberta	2,641.3	52.0	20.8	31.2	48.0	29.6	13.1	5.3
British Columbia	3,511.0	53.0	19.6	33.4	47.0	27.4	13.5	6.1

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

As expected, participation in the labour force increases with education. In both 1990 and 2006, the participation rate for those with less than a postsecondary education ranged from 66% in Alberta to 46% in Newfoundland and Labrador. However, for those with a university degree, Newfoundland and Labrador had the highest participation rate (91.1%) in 1990. But this fell to 81.0% by 2006, indicating that new degree holders—the majority women—were participating at lower rates. With Newfoundland and Labra-

dor dropping to fifth place in 2006, Alberta moved into top spot. Alberta also had the highest participation rate for those with a certificate or diploma from a community college. Ontario, which ranked second in 1990, slid to fifth place in 2006 as its overall participation rate fell from 69.5% to 67.7%.

While the range of participation rates remained around 20 percentage points for those with less than postsecondary education, it narrowed from 10.5 points to 6.8 points for those with a university degree.

Participation rate by education and province

	Population 15 and over	Less than postsecondary			Completed postsecondary		
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University
					%		
1990							
Canada	**67.1**	**60.2**	**49.7**	**73.7**	**81.5**	**79.5**	**85.4**
Newfoundland and Labrador	56.7	46.4	37.5	65.1	82.5	80.3	91.1
Prince Edward Island	65.6	60.0	51.7	76.9	80.2	77.2	89.6
Nova Scotia	61.9	53.3	44.3	70.7	77.4	74.3	85.1
New Brunswick	60.0	52.7	41.8	70.5	78.1	75.4	85.5
Quebec	64.2	55.7	45.7	73.2	82.4	80.4	87.5
Ontario	69.5	63.3	53.8	74.2	82.2	80.1	85.5
Manitoba	67.3	61.4	51.1	75.9	82.3	79.9	86.5
Saskatchewan	66.6	61.0	50.1	76.7	80.2	78.1	85.9
Alberta	72.5	66.3	55.2	77.3	83.9	83.2	85.5
British Columbia	66.9	61.5	49.3	71.3	77.2	75.6	80.6
2006							
Canada	**67.2**	**56.9**	**41.9**	**69.4**	**78.0**	**76.6**	**80.1**
Newfoundland and Labrador	59.2	46.3	33.2	61.8	76.2	74.6	81.0
Prince Edward Island	68.7	61.5	48.1	76.2	77.0	74.6	82.7
Nova Scotia	62.9	52.6	38.1	68.0	73.9	70.8	79.9
New Brunswick	63.7	54.6	38.9	69.4	75.3	73.5	79.3
Quebec	65.5	52.3	39.3	67.6	78.1	77.3	79.6
Ontario	67.7	57.2	41.6	69.0	78.3	76.7	80.6
Manitoba	68.8	61.3	46.6	74.1	79.2	77.7	81.7
Saskatchewan	69.1	62.1	46.5	75.9	78.5	76.5	82.6
Alberta	73.4	66.2	52.8	75.1	81.1	79.7	83.3
British Columbia	65.7	57.1	40.7	66.7	75.3	74.5	76.5

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

The unemployment rate is inversely related to education. In all provinces, a person with more education is less likely to be unemployed. For persons with less than a postsecondary education, the unemployment rate ranged from 21.9% in Newfoundland and Labrador to 7.6% in Ontario in 1990 and from 20.1% in the former to 4.4% in Alberta in 2006. Even though the overall rate of unemployment was highest in Newfoundland and Labrador, in both 1990 and 2006 its rate for university degree holders was lower than Quebec's. The unemployment rate spread for those with a university degree, however, was only 2.5 percentage points in 2006, down from 3.0 points in 1990.

Alberta's unemployment rate of 3.4% in 2006 was the lowest in Canada, replacing Ontario whose 6.2% was the lowest in 1990. The low rate in Alberta was largely due to the demand for labour by its booming economy. This also likely opened up employment opportunities for persons with less than a postsecondary education—a group more likely to experience unemployment in other provinces. For instance, this group had an unemployment rate of 11.2% in Quebec and 8.7% in Ontario, compared with just 4.4% in Alberta. This conclusion is further supported by the group's high participation rate of 66.2% compared with 52.3% in Quebec and 57.2% in Ontario.

Unemployment rate by education and province

	Population 15 and over	Less than postsecondary			Completed postsecondary		
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University
1990				%			
Canada	**8.1**	**9.9**	**12.4**	**7.8**	**5.4**	**6.3**	**3.8**
Newfoundland and Labrador	17.0	21.9	25.9	17.1	10.0	12.0	3.0
Prince Edward Island	14.4	18.1	21.2	13.9	7.8	8.8	5.0
Nova Scotia	10.7	13.1	14.8	11.1	7.6	8.8	5.0
New Brunswick	12.1	15.1	18.7	11.7	7.0	8.4	3.7
Quebec	10.4	12.6	14.8	10.1	7.3	8.1	5.6
Ontario	6.2	7.6	9.5	6.1	3.9	4.7	2.6
Manitoba	7.4	8.6	10.4	7.0	4.9	5.3	4.2
Saskatchewan	7.0	8.2	10.0	6.6	4.9	5.2	4.0
Alberta	6.9	8.4	11.3	6.4	4.6	5.2	3.4
British Columbia	8.4	10.1	14.0	8.0	5.8	6.5	4.3
2006							
Canada	**6.3**	**8.5**	**12.3**	**6.5**	**4.6**	**5.1**	**4.0**
Newfoundland and Labrador	14.8	20.1	25.9	16.5	10.5	12.8	4.3
Prince Edward Island	11.0	15.2	20.9	11.3	7.1	8.2	4.7
Nova Scotia	7.9	10.8	15.1	8.3	5.7	6.6	4.1
New Brunswick	8.8	12.0	18.0	8.8	5.9	7.1	3.4
Quebec	8.0	11.2	15.3	8.5	6.0	6.6	4.9
Ontario	6.3	8.7	12.5	7.0	4.5	4.7	4.2
Manitoba	4.3	5.7	9.1	3.9	2.8	2.8	2.8
Saskatchewan	4.7	6.0	8.5	4.7	3.2	3.4	2.8
Alberta	3.4	4.4	6.4	3.4	2.6	2.8	2.4
British Columbia	4.8	5.9	9.0	4.8	3.8	3.9	3.6

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

The strong relationship between education and the likelihood of being employed prevailed in all provinces in both 1990 and 2006. Alberta had the highest employment rate in both 1990 and 2006, 67.6% and 70.8% respectively. The strong increase reflects the effect of an economic boom, which has resulted in employment growth of 46.5% compared with 25.0% for Ontario and just 4.3% for Newfoundland and Labrador. Persons with less than a postsecondary education had the highest employment rate in Alberta, 63.3%

compared with 52.2% in Ontario and 36.9% in Newfoundland and Labrador. On the other hand, for those with a university degree, Newfoundland and Labrador had the highest rate in 1990 (88.3%), falling to 77.5% in 2006. As with the participation rate, the interprovincial range for the employment rate also narrowed, from 11.2 percentage points to 7.6 points for those with a university degree compared with around 25 points for those with less than a postsecondary education.

Employment rate by education and province

	Population 15 and over	Less than postsecondary			Completed postsecondary		
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University
				%			
1990							
Canada	**61.7**	**54.2**	**43.5**	**68.0**	**77.0**	**74.4**	**82.2**
Newfoundland and Labrador	47.0	36.2	27.7	54.1	74.3	70.7	88.3
Prince Edward Island	56.2	49.2	40.7	66.2	74.0	70.4	85.1
Nova Scotia	55.3	46.2	37.7	62.8	71.5	67.8	80.8
New Brunswick	52.8	44.7	34.0	62.3	72.7	69.1	82.4
Quebec	57.5	48.7	39.0	65.8	76.4	73.9	82.6
Ontario	65.3	58.4	48.7	69.7	79.0	76.3	83.2
Manitoba	62.3	56.1	45.7	70.6	78.2	75.7	82.9
Saskatchewan	61.9	56.0	45.1	71.7	76.4	74.1	82.5
Alberta	67.6	60.7	49.0	72.3	80.1	78.8	82.5
British Columbia	61.3	55.3	42.4	65.6	72.7	70.6	77.1
2006							
Canada	**63.0**	**52.1**	**36.7**	**64.8**	**74.3**	**72.7**	**76.9**
Newfoundland and Labrador	50.4	36.9	24.5	51.5	68.2	65.1	77.5
Prince Edward Island	61.1	52.3	38.1	67.9	71.6	68.4	78.8
Nova Scotia	57.9	46.9	32.4	62.3	69.6	66.1	76.6
New Brunswick	58.1	48.1	31.9	63.3	70.9	68.3	76.7
Quebec	60.2	46.4	33.3	61.9	73.4	72.2	75.7
Ontario	63.5	52.2	36.4	64.1	74.8	73.1	77.2
Manitoba	65.8	57.8	42.3	71.2	77.0	75.6	79.3
Saskatchewan	65.9	58.4	42.5	72.3	76.0	73.9	80.3
Alberta	70.8	63.3	49.5	72.6	79.0	77.5	81.3
British Columbia	62.5	53.7	37.0	63.5	72.5	71.6	73.8

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

Employment for persons with less than a postsecondary education grew by 17.3% in Alberta and 8.3% in British Columbia, whereas it fell in all other provinces. On the other hand, employment levels increased in all provinces for persons with a certificate or diploma from a community college or a university

degree. The growth was higher for women, reflecting the change in the mix of an economy generating more services jobs—in retail and wholesale trade and the public sector (mostly women)—and fewer goods-producing jobs—in manufacturing, construction, and utilities (mostly men).

Growth in employment by education, province and sex from 1990 to 2006

| | Population 15 and over | Less than postsecondary | | | Completed postsecondary | | |
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University
Both sexes				%			
Canada	**26.0**	**-9.8**	**-36.1**	**11.7**	**77.9**	**65.1**	**101.0**
Newfoundland and Labrador	4.3	-21.6	-45.4	4.2	35.9	28.8	57.7
Prince Edward Island	24.5	-8.6	-37.3	27.1	82.2	69.0	115.8
Nova Scotia	14.7	-11.1	-41.1	24.0	44.6	35.0	65.0
New Brunswick	18.3	-9.2	-38.2	16.8	60.2	54.0	74.2
Quebec	19.9	-22.0	-40.2	-3.1	77.0	67.5	97.9
Ontario	25.0	-13.8	-42.1	8.9	82.8	71.4	99.6
Manitoba	14.2	-9.5	-35.1	13.7	57.5	51.4	67.9
Saskatchewan	8.2	-13.9	-38.5	8.4	48.0	37.0	73.8
Alberta	46.5	17.3	-8.2	34.3	86.9	72.1	115.4
British Columbia	40.8	8.3	-19.1	22.5	87.9	63.7	134.9
Men							
Canada	**19.9**	**-11.2**	**-37.5**	**14.3**	**65.2**	**59.3**	**75.0**
Newfoundland and Labrador	-6.1	-27.8	-50.9	0.7	23.3	21.2	28.9
Prince Edward Island	13.9	-15.1	-39.4	24.4	77.1	88.7	55.9
Nova Scotia	5.3	-17.8	-44.6	20.0	34.6	31.2	40.9
New Brunswick	9.7	-14.6	-40.1	12.7	50.0	51.3	47.2
Quebec	12.1	-24.1	-42.0	-1.8	62.6	59.9	68.1
Ontario	19.9	-14.2	-43.7	13.6	70.1	63.4	79.2
Manitoba	10.0	-9.0	-33.5	16.7	45.8	53.9	33.8
Saskatchewan	2.9	-13.7	-37.5	12.0	37.8	35.9	41.4
Alberta	43.6	16.8	-8.0	35.9	79.8	76.8	85.1
British Columbia	34.0	7.5	-20.5	24.3	70.5	53.1	101.7
Women							
Canada	**33.5**	**-8.1**	**-33.9**	**9.0**	**93.6**	**71.8**	**138.1**
Newfoundland and Labrador	17.7	-12.7	-36.6	8.9	50.5	37.0	100.0
Prince Edward Island	37.3	0.0	-34.3	29.9	86.8	54.2	204.3
Nova Scotia	26.2	-2.2	-35.5	28.1	55.9	38.6	96.8
New Brunswick	29.2	-1.8	-34.8	21.6	71.3	56.8	106.0
Quebec	30.1	-19.1	-37.1	-4.5	95.3	76.5	141.3
Ontario	31.2	-13.4	-39.7	4.2	98.5	80.6	128.0
Manitoba	19.5	-10.0	-37.6	10.8	71.3	48.7	116.9
Saskatchewan	15.1	-14.1	-40.4	4.4	58.6	38.1	118.0
Alberta	50.1	18.0	-8.5	32.7	96.2	66.3	160.8
British Columbia	49.2	9.3	-17.0	20.6	111.3	77.1	185.5

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

Women represented 44.4% of the employed in 1990 and inched up to 47.1% by 2006. Although women's share increased in all provinces, Prince Edward Island remained on top with 45.2% and 49.9% respectively.[1] Over the period, women's share of employment increased by only 1.1 percentage points in Alberta compared with 3.6 points in Quebec and 5.6 points in Newfoundland and Labrador.

Women's share for those with a university degree is more dramatic. As more women earned bachelor's and higher degrees, their share of employment jumped from 40.4% to 56.9% in Prince Edward Island, from 41.1% to 53.0% in Manitoba and from 41.8% to 47.8%

in Ontario. Their share was lowest in British Columbia in 1990 (39.6%) and in Ontario in 2006 (47.8%). Among the employed with more than a bachelor's degree, the largest increases in women's share occurred in Manitoba (28.6% to 46.9%) and New Brunswick (32.7% to 49.4%).

The interprovincial range for women's share was 4.8 percentage points for those with less than a postsecondary education, 8.6 points for those with a community college certificate or diploma, 13.8 points for holders of a bachelor's degree, and 11.6 for those with an advanced degree.

Women's share of employment by education and province

	Population 15 and over	Less than postsecondary			Completed postsecondary		
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University
				%			
1990							
Canada	**44.4**	**44.3**	**39.2**	**48.5**	**44.5**	**46.3**	**41.2**
Newfoundland and Labrador	43.5	41.3	37.8	45.0	46.3	48.2	40.5
Prince Edward Island	45.2	41.4	34.7	49.7	52.5	57.2	40.4
Nova Scotia	44.6	42.6	37.6	48.4	47.1	48.9	43.4
New Brunswick	44.5	42.4	37.2	47.1	47.5	48.3	45.9
Quebec	43.3	42.8	37.5	48.2	43.9	45.4	40.6
Ontario	45.1	45.4	40.6	49.2	44.7	46.7	41.8
Manitoba	44.8	44.1	39.8	48.0	46.0	48.9	41.1
Saskatchewan	43.9	40.9	35.5	45.9	49.1	52.1	42.3
Alberta	44.2	44.9	39.9	48.2	43.3	45.0	40.0
British Columbia	44.5	45.7	40.3	48.5	42.7	44.2	39.6
2006							
Canada	**47.1**	**45.2**	**40.6**	**47.3**	**48.5**	**48.2**	**48.8**
Newfoundland and Labrador	49.1	45.9	44.0	47.0	51.3	51.3	51.4
Prince Edward Island	49.9	45.3	36.4	50.8	53.8	52.2	56.9
Nova Scotia	49.1	46.9	41.2	50.0	50.8	50.2	51.7
New Brunswick	48.5	45.9	39.2	49.1	50.8	49.1	54.3
Quebec	46.9	44.4	39.4	47.5	48.5	47.9	49.5
Ontario	47.4	45.6	42.3	47.0	48.6	49.2	47.8
Manitoba	46.8	43.9	38.3	46.7	50.0	48.0	53.0
Saskatchewan	46.6	40.8	34.4	44.2	52.7	52.5	53.0
Alberta	45.3	45.2	39.8	47.6	45.4	43.5	48.4
British Columbia	47.1	46.1	41.3	47.7	48.0	47.9	48.2

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

As the level of education rises, the likelihood of working full time increases. Overall, between 79.7% and 84.8% of employed persons worked full time in 2006 compared with between 77.7% and 87.6% in 1990. The proportion was the lowest in British Columbia in 2006 and Saskatchewan in 1990, and highest in Newfoundland and Labrador in both years. Also in both years, 83% or more of those with a postsecondary education were working full time.

Between 1990 and 2006, the proportion of university graduates employed full time dropped in all provinces, with the largest declines in Newfoundland and Labrador and British Columbia. On the other hand, those with a community college certificate or diploma increased their share of full-time employment in five provinces: Prince Edward Island, New Brunswick, Manitoba, Saskatchewan and Alberta.

Proportion employed full-time by education and province

	Population 15 and over	Less than postsecondary			Completed postsecondary		
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University
1990				%			
Canada	**83.0**	**79.8**	**75.8**	**83.1**	**87.7**	**86.7**	**89.6**
Newfoundland and Labrador	87.6	84.0	82.9	85.2	92.1	91.7	93.4
Prince Edward Island	82.9	81.0	79.8	82.6	87.1	86.2	89.5
Nova Scotia	82.9	78.0	75.2	81.4	88.5	87.7	90.1
New Brunswick	84.0	80.6	76.1	84.6	89.4	88.1	92.3
Quebec	84.6	82.9	82.1	83.8	86.8	85.6	89.4
Ontario	83.0	79.0	73.9	83.2	88.8	87.9	90.2
Manitoba	79.8	76.4	71.9	80.5	85.9	84.4	88.3
Saskatchewan	77.7	75.0	69.9	79.6	82.6	80.8	87.0
Alberta	83.0	79.4	73.1	83.6	87.9	87.4	88.8
British Columbia	82.2	79.2	71.9	83.0	86.4	85.5	88.1
2006							
Canada	**82.0**	**76.6**	**69.6**	**79.8**	**85.9**	**85.6**	**86.4**
Newfoundland and Labrador	84.8	78.8	75.5	80.6	89.3	90.1	87.2
Prince Edward Island	84.1	79.9	74.4	83.2	88.0	87.8	88.6
Nova Scotia	81.2	74.0	67.1	77.9	86.4	86.3	86.5
New Brunswick	83.9	78.8	70.6	82.7	88.4	88.3	88.5
Quebec	81.8	76.8	76.4	77.1	84.7	84.1	86.0
Ontario	82.3	75.6	66.1	79.7	86.9	86.5	87.5
Manitoba	80.3	75.5	67.2	79.8	85.3	85.6	84.8
Saskatchewan	81.4	77.1	66.4	82.6	85.9	86.0	85.6
Alberta	83.9	79.6	69.9	84.0	87.7	88.1	87.1
British Columbia	79.7	76.1	67.1	79.2	82.7	82.8	82.5

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

About 60% of employed Canadians had a postsecondary education in 2006 compared with 40% in 1990. Among those with a postsecondary education, the proportion of university graduates inched up from 35.5% to 40.1%, with 7 in 10 having a bachelor's degree.

The proportion of the employed with a postsecondary education rose in all provinces over the 1990 to 2006 period, with the largest increases in Quebec (20.2 percentage points) and Ontario (18.6 points), and the smallest in Alberta (11.6).[2] The proportion with a uni-

Distribution of employment by education by province

	Employed 15 and over	Less than postsecondary			Completed postsecondary			Degree holder share of postsecondary	Bachelor's share of degrees
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University		
	'000				%				
1990									
Canada	**13,086.4**	**59.2**	**26.7**	**32.5**	**40.8**	**26.3**	**14.5**	**35.5**	**68.3**
Newfoundland and Labrador	206.9	55.1	28.6	26.5	44.9	33.9	11.0	24.5	67.0
Prince Edward Island	55.1	63.2	35.0	28.1	36.7	26.3	10.3	28.2	70.2
Nova Scotia	385.3	53.8	29.0	24.8	46.2	31.3	14.9	32.2	66.0
New Brunswick	300.3	60.3	28.5	31.7	39.7	27.6	12.1	30.5	71.2
Quebec	3,140.3	57.7	29.4	28.3	42.3	29.0	13.3	31.4	69.6
Ontario	5,194.1	59.8	26.7	33.1	40.2	24.0	16.2	40.3	66.3
Manitoba	513.8	64.6	30.7	33.9	35.4	22.2	13.2	37.2	69.0
Saskatchewan	454.2	64.2	30.6	33.6	35.8	25.1	10.7	29.9	73.8
Alberta	1,276.8	58.1	23.2	34.9	41.9	27.6	14.4	34.3	72.1
British Columbia	1,559.6	59.2	20.2	39.0	40.8	26.9	13.8	34.0	68.9
2006									
Canada	**16,484.3**	**42.4**	**13.5**	**28.8**	**57.6**	**34.5**	**23.1**	**40.1**	**69.5**
Newfoundland and Labrador	215.7	41.5	15.0	26.5	58.5	41.9	16.6	28.4	67.0
Prince Edward Island	68.6	46.4	17.6	28.7	53.6	35.7	17.9	33.4	70.7
Nova Scotia	441.8	41.7	14.9	26.8	58.3	36.9	21.4	36.8	71.9
New Brunswick	355.4	46.2	14.9	31.3	53.8	35.9	17.8	33.2	73.8
Quebec	3,765.4	37.5	14.6	22.9	62.5	40.6	21.9	35.1	72.2
Ontario	6,492.7	41.2	12.4	28.9	58.8	32.9	25.8	44.0	66.6
Manitoba	587.0	51.2	17.4	33.7	48.8	29.5	19.4	39.7	74.8
Saskatchewan	491.6	51.1	17.4	33.7	48.9	31.7	17.1	35.1	76.7
Alberta	1,870.7	46.5	14.5	32.0	53.5	32.4	21.1	39.5	72.1
British Columbia	2,195.5	45.5	11.6	33.9	54.4	31.3	23.1	42.4	69.2

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

versity degree (bachelor's or above) was highest in Ontario in both years (partly due to its larger intake of immigrants), followed by Nova Scotia in 1990 but by British Columbia in 2006. Despite the progress in level of education, just over half of the employed in Manitoba and Saskatchewan in 2006 still had less than a postsecondary education.

Employment among people with postsecondary education has increased in all provinces

%
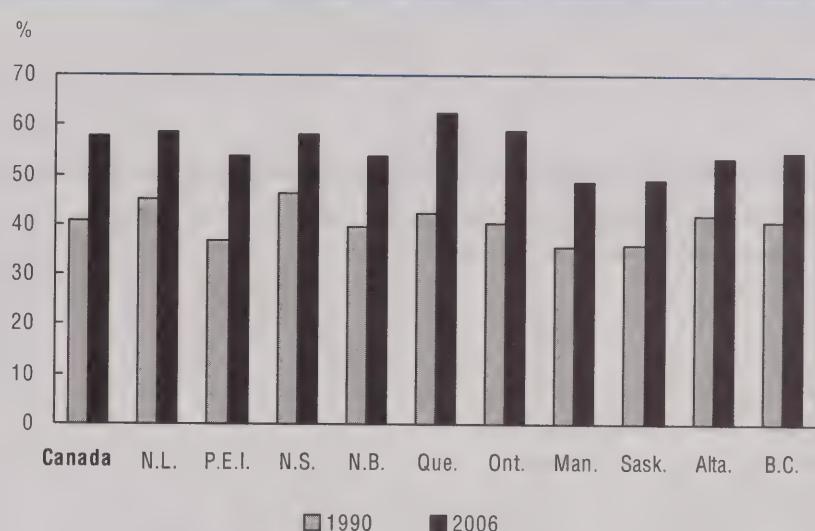
Source: Statistics Canada, Labour Force Survey.

People with less education or fewer skills are much more likely to experience unemployment. Between 54% and 69% of the unemployed had less than a postsecondary education in 2006, down considerably from between 68% and 83% in 1990. Although unemploy- ment remains concentrated among those with less education, their share is falling. This is primarily a consequence of the overall increase in educational attainment in the working-age population.

Distribution of unemployment by education by province

	Employed 15 and over	Less than postsecondary			Completed postsecondary			Degree holder share of post-secondary	Bachelor's share of degrees
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University		
	'000				%				
1990									
Canada	**1,158.3**	**73.4**	**42.6**	**30.9**	**26.6**	**20.2**	**6.4**	**24.1**	**78.9**
Newfoundland and Labrador	42.3	75.7	48.9	26.7	24.3	22.7	1.7	6.8	100.0
Prince Edward Island	9.3	82.8	55.9	26.9	18.3	15.1	3.2	17.6	66.7
Nova Scotia	46.1	67.9	42.1	25.8	31.7	25.2	6.5	20.5	80.0
New Brunswick	41.3	78.2	47.7	30.5	21.8	18.4	3.4	15.6	85.7
Quebec	365.1	71.4	43.9	27.4	28.6	21.9	6.7	23.4	81.2
Ontario	341.5	75.2	42.5	32.7	24.8	18.2	6.6	26.8	76.7
Manitoba	40.9	76.8	45.0	31.8	23.0	15.6	7.3	31.9	83.3
Saskatchewan	34.4	76.2	44.8	31.4	24.1	18.3	5.8	24.1	90.0
Alberta	94.1	72.6	40.1	32.5	27.4	20.5	6.9	25.2	81.5
British Columbia	143.4	72.7	35.8	37.0	27.3	20.4	6.8	25.1	73.5
2006									
Canada	**1,108.4**	**58.2**	**28.4**	**29.9**	**41.8**	**27.6**	**14.2**	**34.0**	**70.1**
Newfoundland and Labrador	37.5	60.3	30.1	30.1	39.5	35.2	4.3	10.8	75.0
Prince Edward Island	8.5	67.1	37.6	29.4	32.9	25.9	7.1	21.4	83.3
Nova Scotia	38.1	58.8	30.7	28.1	41.2	30.4	10.8	26.1	70.7
New Brunswick	34.2	65.2	33.9	31.3	34.8	28.4	6.4	18.5	77.3
Quebec	328.7	54.5	30.2	24.2	45.5	32.7	12.8	28.1	70.8
Ontario	434.6	58.9	26.5	32.4	41.1	24.3	16.8	40.8	68.4
Manitoba	26.5	69.1	38.9	30.2	30.9	18.5	12.5	40.2	81.8
Saskatchewan	24.0	66.7	32.9	33.8	32.9	22.9	10.0	30.4	79.2
Alberta	66.8	59.4	27.8	31.6	40.4	25.9	14.5	35.9	69.1
British Columbia	109.6	57.5	23.0	34.5	42.5	25.5	17.1	40.1	70.6

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

Distribution of those not in the labour force by education by province

	Not in labour force	Less than postsecondary			Completed postsecondary		
		Total	Less than high school	Completed high school[1]	Total	Certificate/ diploma	University
	'000			%			
1990							
Canada	**6,970.1**	**81.5**	**57.9**	**23.6**	**18.5**	**13.6**	**4.8**
Newfoundland and Labrador	190.7	88.6	70.0	18.6	11.4	10.2	1.2
Prince Edward Island	33.7	84.0	68.0	16.0	16.0	13.9	2.1
Nova Scotia	265.6	78.8	62.0	16.8	21.2	17.2	4.0
New Brunswick	227.5	84.2	64.4	19.8	15.8	13.0	2.8
Quebec	1,951.6	84.4	65.8	18.6	15.6	12.4	3.2
Ontario	2,424.4	80.6	54.3	26.3	19.4	13.4	6.0
Manitoba	269.6	84.6	62.7	22.0	15.4	11.3	4.1
Saskatchewan	245.2	82.9	62.6	20.3	17.1	13.7	3.4
Alberta	518.9	79.3	52.2	27.1	20.7	14.5	6.2
British Columbia	842.8	76.3	44.7	31.6	23.7	17.2	6.5
2006							
Canada	**8,592.4**	**67.2**	**41.1**	**26.1**	**32.8**	**21.3**	**11.5**
Newfoundland and Labrador	174.6	74.7	50.3	24.3	25.3	20.2	5.1
Prince Edward Island	35.1	66.7	47.0	19.7	33.6	25.9	7.7
Nova Scotia	282.8	65.8	44.3	21.4	34.2	25.4	8.8
New Brunswick	221.7	70.0	45.7	24.3	30.1	22.3	7.8
Quebec	2,157.3	67.5	46.5	20.9	32.5	22.2	10.3
Ontario	3,301.7	66.5	39.0	27.5	33.5	20.7	12.8
Manitoba	278.5	72.2	46.4	25.8	27.8	18.3	9.4
Saskatchewan	230.9	70.6	46.6	23.9	29.4	21.5	7.9
Alberta	703.8	66.0	36.8	29.2	34.0	22.5	11.5
British Columbia	1,205.9	66.3	33.9	32.3	33.7	20.3	13.4

1. Includes those who had some postsecondary education.
Source: Statistics Canada, Labour Force Survey.

A person may be out of the labour force for various reasons including school attendance, sickness, home-care responsibility, voluntary or involuntary withdrawal, or retirement. In each province, the majority of those not in the labour force had less than a post-secondary education in both 1990 and 2006. However, in Ontario, Alberta and British Columbia, 12% to 13% had a university degree in 2006 compared with just 6% in 1990. A similar jump can be seen at the national level. There is a growing pool of highly educated individuals who may be drawn into the labour market should their circumstances change.

■ Notes

1. Estimates for Prince Edward Island may have larger sampling variability because of small sample sizes.

2. A relatively higher proportion of the employed with a community college certificate or diploma in Quebec pushed its ranking to the top.

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Work absence rates

There are many kinds of absence. Some, such as annual vacation, are generally considered beneficial for both the organization and the employee. Since they are usually scheduled, their effect on the organization can be fairly easily absorbed; the same can be said of statutory holidays. Other absences, such as those caused by illness and family-related demands, are generally unavoidable, as are those due to inclement weather.

Absenteeism, a term used to refer to absences that are avoidable, habitual and unscheduled, is a source of irritation to employers and co-workers. Such absences are disruptive to proper work scheduling and output, and costly to an organization and the economy as a whole. Although absenteeism is widely acknowledged to be a problem, it is not easy to quantify. The dividing line between avoidable and unavoidable is difficult to draw, and absenteeism generally masquerades as legitimate absence. The Labour Force Survey (LFS) can provide measures of time lost because of personal reasons—that is, illness or disability, and personal or family responsibilities. However, within these categories, it is impossible to determine if an absence is avoidable or unscheduled. LFS data on absences for personal reasons can, however, be analyzed to identify patterns or trends that indicate the effect of absenteeism (see *Data source and definitions*).

Recent trends—1997 to 2007

Since 2000, both the incidence and the number of days lost for personal reasons (illness or disability, and personal or family responsibilities) have shown a rising trend (Chart). Several factors have contributed: notably, an aging workforce; the growing share of women in the workforce, especially those with young children; high worker stress;[1] and more generous sick- and family-related leave benefits.

In an average week in 1997, excluding women on maternity leave, about 5.5% (484,000) of all full-time employees holding one job were absent from work for all or part of the week for personal reasons.[2] By 2007, the figure had risen to 8.8% (969,000) (Table 1). Total work time missed also rose steadily, from

Chart   Work absence rates, 1997 to 2007
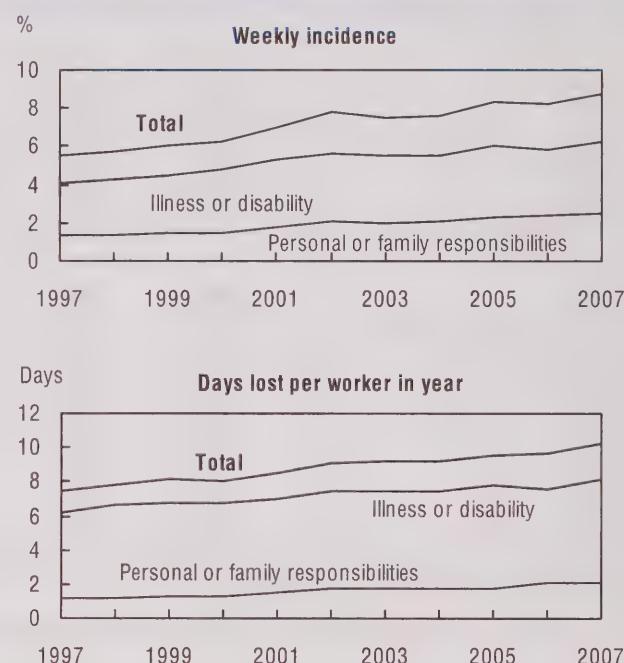
Source: Statistics Canada, Labour Force Survey.

3.0% of the scheduled week in 1997 to 4.1% in 2007. Extrapolated over the full year, work time lost for personal reasons increased from the equivalent of 7.4 days per worker in 1997 to 10.2 days in 2007.

Variations in absence rates in 2007

Absence for personal reasons differs among various worker groups. Several factors are responsible, principally working conditions (physical environment, degree of job stress, employer-employee relations, collective agreement provisions, work schedules); adequacy and affordability of community facilities such as child-care centres and public transportation;

family circumstances, especially the presence of pre-school children or other dependent family members; and physical health of the worker, a factor closely related to age. Measuring the effects of these and other contributing factors is not easy since many are not captured by the LFS. However, some insight is gained by examining personal absences in 2007 by selected demographic characteristics, occupation and industry, and other attributes such as union and job status.

Demographic differences

In 2007, excluding women on maternity leave, an estimated 8.8% of full-time employees missed some work each week for personal reasons: 6.2% for own illness or disability, and 2.5% for personal or family responsibilities (Table 2). As a result, full-time employees lost about 4.1% of their work time each week.

On average, each full-time employee lost 10.2 days in 2007 for personal reasons (8.1 for own illness or disability plus 2.1 for personal or family demands). This amounted to an estimated 113 million workdays for all full-time employees. Men lost fewer days than women—8.8 (6.7 for illness or disability plus 2.1 for personal or family demands) versus 12.0 (9.9 plus 2.1).

The presence of preschool-aged children exerts a strong influence on work absences for personal or family responsibilities. In 2007, full-time employees in families with at least one preschool-aged child lost an average of 5.8 days, compared with only 1.6 for those in families without children.

The growing prevalence of family-leave entitlements in the workplace, the extension of Employment Insurance parental benefits,[3] and the greater involvement of fathers in child care appear to have eliminated the difference between the sexes with respect to personal and family-related absences (Marshall 2003; Marshall 2008, forthcoming). In 1997, women with preschool-aged children and working full time lost 4.1 days for such reasons, compared with 1.8 days for men in similar circumstances. By 2006, the gap had narrowed considerably (6.2 days for women versus 5.4 for men), and in 2007, it actually reversed (6.3 days for men versus 4.8 for women).

Workdays missed because of illness or disability tended to rise with age, from an average of 5.9 days for youth (15 to 19) to 11.4 for full-time employees aged 55 to 64.

Industry and sector

Work absence rates differ by sector (public or private) and industry, with almost all of the difference arising from illness and disability absences (Table 3). Contributing factors include the nature and demands of the job, the male–female composition of the workforce, and the union density—the last being a strong determinant of the presence of paid sick or family leave.

Full-time employees in the public sector (more likely unionized or female) lost more work time in 2007 for personal reasons (12.8 days, compared with 13.0 in 2006) than their private-sector counterparts (9.5 days, unchanged from 2006).

At the major (2-digit) industry level, the most workdays were missed by employees in health care and social assistance (14.3 days), transportation and warehousing (12.2), and public administration (12.2).

The lowest averages were recorded by full-time workers in professional, scientific and technical services (6.6 days). Those in accommodation and food services (8.1), primary industries other than agriculture (8.5), and finance, insurance, real estate and leasing (8.9) also missed fewer workdays.

Occupation

Contributing factors for absence rates by occupation are similar to those for industry (Table 4). Again, as by major industry, differences arise mainly from time lost due to illness or disability.

The most days lost in 2007 were recorded for full-time employees in health occupations (15.6), and occupations unique to production (12.8). Workers in management (6.4), and in culture and recreation (6.6) recorded the fewest days lost.

Union coverage, job status, workplace size and job tenure

Full-time workers who belonged to unions or were covered by collective agreements missed more workdays on average in 2007 for personal reasons than their non-unionized counterparts (14.0 versus 8.4) (Table 5).

Workers with permanent jobs (more likely to be unionized) lost more workdays (10.4) than those whose jobs were not permanent (8.3).

Days lost tended to rise with workplace size, increasing from a low of 8.8 in workplaces with fewer than 20 employees (firms more likely to have low union rates) to 11.8 in workplaces with more than 500 employees (firms likely to have high union rates).

Days lost tended to rise with job tenure, with almost all the differences arising from illness and disability. Employees with tenure of up to one year lost 7.8 days, while those with over 14 years lost 12.2 days (the latter group were also likely older).

Province and CMA

Work absence levels differed by geographic area (Table 6), with most of the variation again arising from illness or disability.

Full-time employees in Nova Scotia (12.0) and Quebec (12.0) lost the most work time in 2007. Those in Alberta (9.0) and Ontario (9.3) lost the least.

Among the census metropolitan areas, Thunder Bay (14.6), Gatineau (13.3) and Saguenay (12.0) lost the most days per full-time worker. Calgary (8.1), Kitchener (8.3) and Toronto (8.4) had the least.

Perspectives

Notes

1. For more information on this subject, see Margot Shields, "Stress, health and the benefit of social support," *Health Reports* (Statistics Canada Catalogue 82-003-XIE) vol. 15, no. 1, January 2004. Also see Cara Williams, "Sources of workplace stress," *Perspectives on Labour and Income* (Statistics Canada Catalogue 75-001-XIE) vol. 4, no. 6, June 2003 online edition.

2. 1997 marks the introduction of the revised Labour Force Survey questionnaire.

3. In December 2000, changes in Employment Insurance regulations extended the duration of parental leave benefits from 10 to 35 weeks. The 35 weeks can be taken by one (qualifying) parent, or they can be split between both (qualifying) parents.

References

Marshall, Katherine. 2003. "Benefiting from extended parental leave". *Perspectives on Labour and Income*. Vol. 4, no. 3. March. Statistics Canada Catalogue no. 75-001-XIE.

Marshall, Katherine. 2008. "Fathers' use of parental leave". *Perspectives on Labour and Income*. Vol. 9, no. 6. June (forthcoming). Statistics Canada Catalogue no. 75-001-XIE.

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Data source and definitions

The data in this article are annual averages from the **Labour Force Survey** (LFS). They refer to full-time employees holding only one job. Part-time, self-employed and unpaid family workers are excluded because they generally have more opportunity to arrange their work schedules around personal or family responsibilities. Multiple jobholders, too, are excluded because it is not possible using LFS data to allocate time lost, or the reason for it, to specific jobs. Women on maternity leave are also excluded. Some human resource practitioners exclude persons on long-term illness or disability leave (exceeding one year) from their attendance management statistics. Such persons are, however, included in Statistics Canada's work absence estimates if they count themselves as employed (that is, they continue to receive partial or full pay from their employer). In 2007, the number of employed persons on such long-term illness or disability leave averaged only 25,000 in a typical week. Their exclusion would have reduced the weekly work absence incidence for illness or disability from 6.2% to 6.0%, the inactivity rate from 3.2% to 3.0%, and days lost per worker that year from 8.1 to 7.5.

Personal reasons for absence are split into two categories: 'own illness or disability' and 'personal or family responsibilities' (caring for own children, caring for elder relative, and other personal or family responsibilities). Absences for these two reasons represented about 31% of all time lost by full-time paid workers each week in 2007. Vacations, which accounted for 43% of total time away from work, are not counted in this study, nor are statutory holidays, which represented 8%. Maternity leave represented 11% and other reasons, 7%.

The incidence of absence is the percentage of full-time paid workers reporting some absence in the reference week. In calculating incidence, the length of work absence—whether an hour, a day, or a full week—is irrelevant.

The **inactivity rate** shows hours lost as a proportion of the usual weekly hours of full-time paid workers. It takes into account both the incidence and length of absence in the reference week.

Days lost per worker are calculated by multiplying the inactivity rate by the estimated number of working days in the year (250).

Reasons for work absences in the LFS

The LFS sets out the following reasons for being away from work:

- own illness or disability
- caring for own children
- caring for elder relative (60 years or older)
- maternity leave (women only)
- other personal or family responsibilities
- vacation
- labour dispute (strike or lockout)
- temporary layoff due to business conditions
- holiday (legal or religious)
- weather
- job started or ended during week
- working short time (because of material shortages, plant maintenance or repair, for instance)
- other

As normally published, personal or family responsibilities consist of caring for own children, caring for elder relative, and other personal or family responsibilities.

Table 1 Absence rates for full-time employees by sex, 1997 to 2007, excluding maternity leave

	Incidence[1]			Inactivity rate[2]			Days lost per worker in year[3]		
	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities
		%			%			days	
Both sexes									
1997	5.5	4.1	1.4	3.0	2.5	0.5	7.4	6.2	1.2
1998	5.7	4.3	1.4	3.1	2.6	0.5	7.8	6.6	1.2
1999	6.0	4.5	1.5	3.2	2.7	0.5	8.1	6.8	1.3
2000	6.3	4.8	1.5	3.2	2.7	0.5	8.0	6.7	1.3
2001	7.0	5.3	1.8	3.4	2.8	0.6	8.5	7.0	1.5
2002	7.8	5.6	2.1	3.6	3.0	0.7	9.1	7.4	1.7
2003	7.5	5.5	2.0	3.7	3.0	0.7	9.2	7.5	1.7
2004	7.6	5.5	2.1	3.7	3.0	0.7	9.2	7.5	1.7
2005	8.3	6.0	2.3	3.9	3.1	0.7	9.6	7.8	1.8
2006	8.2	5.8	2.4	3.9	3.0	0.9	9.7	7.6	2.1
2007	8.8	6.2	2.5	4.1	3.2	0.8	10.2	8.1	2.1
Men									
1997	4.6	3.4	1.2	2.5	2.1	0.4	6.3	5.3	0.9
1998	4.9	3.7	1.2	2.7	2.3	0.4	6.9	5.8	1.0
1999	5.2	3.9	1.3	2.8	2.4	0.4	7.0	5.9	1.1
2000	5.5	4.1	1.4	2.8	2.4	0.4	7.0	5.9	1.1
2001	6.1	4.6	1.6	3.1	2.5	0.5	7.6	6.3	1.3
2002	6.7	4.8	1.9	3.2	2.6	0.6	8.0	6.5	1.6
2003	6.5	4.7	1.8	3.3	2.6	0.6	8.2	6.6	1.5
2004	6.6	4.6	2.0	3.2	2.6	0.7	8.0	6.4	1.6
2005	7.2	5.2	2.1	3.4	2.7	0.7	8.6	6.9	1.7
2006	7.2	5.1	2.1	3.5	2.7	0.8	8.7	6.7	1.9
2007	7.5	5.1	2.4	3.5	2.7	0.8	8.8	6.7	2.1
Women									
1997	6.7	5.1	1.7	3.6	3.0	0.6	9.1	7.6	1.5
1998	6.7	5.1	1.6	3.7	3.1	0.6	9.2	7.8	1.5
1999	7.1	5.4	1.8	3.8	3.2	0.6	9.6	8.0	1.6
2000	7.5	5.7	1.8	3.8	3.2	0.6	9.4	7.9	1.5
2001	8.2	6.2	2.0	3.9	3.2	0.7	9.8	8.0	1.8
2002	9.2	6.7	2.4	4.3	3.5	0.8	10.7	8.7	1.9
2003	8.9	6.6	2.3	4.3	3.5	0.8	10.7	8.8	1.9
2004	8.9	6.6	2.3	4.3	3.6	0.7	10.8	9.0	1.9
2005	9.6	7.0	2.6	4.5	3.7	0.8	11.2	9.1	2.0
2006	9.5	6.8	2.7	4.5	3.5	1.0	11.2	8.8	2.4
2007	10.3	7.5	2.8	4.8	3.9	0.9	12.0	9.9	2.1

1. Absent workers divided by total.
2. Hours absent divided by hours usually worked.
3. Inactivity rate multiplied by working days in year (250).
Source: Statistics Canada, Labour Force Survey.

Table 2 Absence rates for full-time employees by sex, age, education and presence of children, 2007, excluding maternity leave

	Incidence[1]			Inactivity rate[2]			Days lost per worker in year[3]		
	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities
Age	%			%			days		
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
15 to 19	8.4	6.0	2.4	3.2	2.4	0.8	8.0	5.9	2.1
20 to 24	8.1	5.9	2.2	3.0	2.4	0.6	7.6	6.0	1.5
25 to 34	9.1	6.0	3.1	3.7	2.6	1.1	9.3	6.6	2.8
35 to 44	8.9	6.1	2.8	4.1	3.1	1.0	10.1	7.7	2.4
45 to 54	8.5	6.3	2.2	4.4	3.7	0.7	10.9	9.2	1.7
55 to 64	8.9	7.0	1.9	5.2	4.5	0.6	12.9	11.4	1.5
65 and over	7.7	5.8	1.8	4.3	3.7	0.6	10.8	9.2	1.6
Men	**7.5**	**5.1**	**2.4**	**3.5**	**2.7**	**0.8**	**8.8**	**6.7**	**2.1**
15 to 19	7.7	5.3	2.4	2.9	2.2	0.8	7.4	5.4	1.9
20 to 24	7.2	5.3	1.9	2.8	2.3	0.5	7.1	5.7	1.4
25 to 34	7.7	4.7	3.0	3.3	2.0	1.3	8.2	5.1	3.1
35 to 44	7.6	4.9	2.6	3.4	2.4	1.0	8.6	6.1	2.5
45 to 54	7.2	5.2	2.0	3.7	3.1	0.6	9.3	7.8	1.4
55 to 64	7.8	6.2	1.6	4.6	4.1	0.5	11.5	10.3	1.1
65 and over	6.4	5.0	F	3.6	3.1	F	9.1	7.7	F
Women	**10.3**	**7.5**	**2.8**	**4.8**	**3.9**	**0.9**	**12.0**	**9.9**	**2.1**
15 to 19	9.5	7.1	2.4	3.6	2.6	1.0	9.0	6.6	2.4
20 to 24	9.2	6.7	2.5	3.3	2.6	0.7	8.3	6.5	1.8
25 to 34	10.9	7.8	3.2	4.4	3.5	0.9	10.9	8.7	2.2
35 to 44	10.6	7.5	3.1	4.9	3.9	0.9	12.2	9.9	2.3
45 to 54	10.0	7.5	2.5	5.2	4.4	0.8	12.9	10.9	2.0
55 to 64	10.2	8.0	2.2	5.9	5.1	0.8	14.9	12.8	2.1
65 and over	10.0	7.5	F	5.7	4.9	F	14.3	12.3	F
Educational attainment									
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
Less than grade 9	9.2	7.1	2.1	5.6	4.8	0.8	13.9	12.0	1.9
Some secondary	10.0	7.5	2.5	5.2	4.3	0.9	13.1	10.9	2.2
High school graduation	8.3	6.0	2.3	3.9	3.1	0.8	9.8	7.8	2.0
Some postsecondary	9.1	6.6	2.5	4.0	3.3	0.8	10.1	8.1	2.0
Postsecondary certificate or diploma	9.3	6.6	2.7	4.4	3.6	0.9	11.1	8.9	2.1
University degree	7.8	5.2	2.6	3.2	2.3	0.9	7.9	5.7	2.2
Presence of children									
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
With children	9.3	6.0	3.3	4.3	3.2	1.2	10.8	7.9	2.9
Preschoolers - under 5 years	11.3	6.0	5.4	5.1	2.8	2.3	12.7	6.9	5.8
5 to 12 years	8.8	5.8	3.0	3.8	2.9	0.8	9.4	7.3	2.1
13 years and over	8.3	6.2	2.1	4.3	3.6	0.6	10.6	9.1	1.5
Without children	8.4	6.4	2.0	3.9	3.3	0.6	9.8	8.2	1.6

1. Absent workers divided by total.
2. Hours absent divided by hours usually worked.
3. Inactivity rate multiplied by working days in year (250).
Source: Statistics Canada, Labour Force Survey.

Table 3 Absence rates for full-time employees by industry and sector, 2007, excluding maternity leave

	Incidence[1]			Inactivity rate[2]			Days lost per worker in year[3]		
	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities
		%			%			days	
All industries	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
Public employees	10.6	8.0	2.6	5.1	4.2	0.9	12.8	10.4	2.4
Private employees	8.2	5.7	2.5	3.8	3.0	0.8	9.5	7.4	2.0
Goods-producing	**8.3**	**5.6**	**2.7**	**3.9**	**3.1**	**0.8**	**9.8**	**7.7**	**2.1**
Primary	6.7	4.5	2.3	3.4	2.6	0.8	8.5	6.5	2.1
Agriculture	8.2	5.3	3.0	3.7	2.8	0.9	9.2	7.1	2.2
Other	6.2	4.2	2.0	3.3	2.5	0.8	8.3	6.3	2.0
Utilities	9.2	6.9	2.3	4.5	3.6	0.8	11.2	9.1	2.1
Construction	7.8	5.3	2.5	3.7	2.9	0.8	9.4	7.3	2.1
Manufacturing	8.7	5.9	2.8	4.1	3.2	0.9	10.2	8.1	2.1
Durable	8.7	5.8	2.8	3.9	3.1	0.8	9.7	7.7	2.0
Non-durable	8.8	6.0	2.8	4.4	3.5	1.0	11.1	8.7	2.4
Service-producing	**8.9**	**6.4**	**2.5**	**4.1**	**3.3**	**0.8**	**10.3**	**8.2**	**2.1**
Trade	8.1	5.7	2.4	3.7	2.9	0.8	9.3	7.3	2.0
Wholesale	7.5	5.1	2.5	3.4	2.7	0.8	8.6	6.6	1.9
Retail	8.3	5.9	2.4	3.9	3.0	0.8	9.7	7.6	2.1
Transportation and warehousing	8.7	6.5	2.2	4.9	4.1	0.8	12.2	10.1	2.1
Finance, insurance, real estate and leasing	8.3	5.8	2.5	3.5	2.8	0.7	8.9	7.0	1.8
Finance and insurance	8.6	6.0	2.5	3.7	2.9	0.7	9.1	7.3	1.8
Real estate and leasing	7.1	4.8	2.3	3.1	2.4	0.7	7.8	5.9	1.9
Professional, scientific and technical	7.6	4.8	2.8	2.6	1.9	0.7	6.6	4.8	1.8
Business, building and support services	10.0	7.1	2.9	4.2	3.3	0.9	10.6	8.3	2.4
Educational services	9.7	7.0	2.6	4.2	3.3	0.9	10.6	8.3	2.3
Health care and social assistance	10.8	8.6	2.2	5.7	4.9	0.8	14.3	12.3	2.0
Information, culture and recreation	7.6	5.4	2.2	3.7	2.9	0.8	9.3	7.3	2.0
Accommodation and food services	6.8	5.0	1.8	3.2	2.5	0.7	8.1	6.3	1.8
Other services	8.3	5.6	2.8	3.8	2.8	1.0	9.5	7.1	2.4
Public administration	11.3	8.0	3.3	4.9	3.7	1.2	12.2	9.3	2.9
Federal	14.2	9.9	4.3	6.0	4.4	1.6	15.0	11.0	4.0
Provincial	11.4	8.2	3.2	5.0	4.0	1.0	12.5	10.0	2.5
Local, other	7.9	5.6	2.2	3.5	2.7	0.8	8.7	6.7	2.0

1. Absent workers divided by total.
2. Hours absent divided by hours usually worked.
3. Inactivity rate multiplied by working days in year (250).
Source: Statistics Canada, Labour Force Survey.

Table 4 Absence rates for full-time employees by occupation, 2007, excluding maternity leave

	Incidence[1]			Inactivity rate[2]			Days lost per worker in year[3]		
	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities	Total	Illness or disability	Personal or family respon-sibilities
		%			%			days	
All occupations	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
Management	6.2	4.2	2.0	2.6	1.9	0.6	6.4	4.8	1.6
Business, finance and administrative	10.1	7.1	3.0	4.2	3.3	0.9	10.5	8.3	2.1
Professional	7.8	5.5	2.3	2.9	2.2	0.7	7.3	5.5	1.8
Financial and administrative	8.9	6.0	2.8	3.8	2.9	0.8	9.4	7.3	2.1
Clerical	11.2	8.0	3.2	4.7	3.8	0.9	11.8	9.5	2.3
Natural and applied sciences	8.0	5.0	2.9	3.0	2.1	0.9	7.4	5.2	2.2
Health	10.7	8.8	1.9	6.3	5.5	0.8	15.6	13.7	1.9
Professional	6.8	4.9	F	2.6	2.1	F	6.6	5.2	F
Nursing	10.3	8.6	1.7	6.5	5.7	0.8	16.2	14.3	1.9
Technical	10.6	8.5	2.1	6.0	5.1	0.9	15.1	12.8	2.3
Support staff	12.7	10.7	2.1	7.8	7.0	0.7	19.5	17.6	1.9
Social and public service	9.9	7.1	2.8	4.4	3.4	1.0	11.1	8.5	2.6
Legal, social and religious	10.5	7.5	3.0	5.0	3.9	1.1	12.4	9.6	2.8
Teachers and professors	9.5	6.8	2.7	4.0	3.1	1.0	10.1	7.6	2.5
Secondary and elementary	11.0	8.0	2.9	4.8	3.7	1.1	12.0	9.2	2.7
Other	6.1	4.1	2.1	2.5	1.7	0.7	6.2	4.4	1.9
Culture and recreation	7.7	5.3	2.4	2.7	2.0	0.6	6.6	5.0	1.6
Sales and service	7.8	5.7	2.1	3.8	3.0	0.8	9.6	7.6	1.9
Wholesale	6.3	4.1	2.3	2.4	1.8	0.6	6.0	4.5	1.5
Retail	7.7	5.6	2.0	3.8	3.0	0.8	9.4	7.5	1.9
Food and beverage	6.8	5.1	1.8	3.6	2.8	0.8	9.0	7.0	2.0
Protective services	7.9	6.0	1.9	4.3	3.4	1.0	10.8	8.4	2.4
Childcare and home support	10.5	7.6	2.9	4.2	3.4	0.8	10.5	8.5	2.1
Travel and accommodation	8.9	6.7	2.2	4.6	3.8	0.8	11.5	9.4	2.1
Trades, transport and equipment operators	8.5	6.0	2.5	4.4	3.6	0.9	11.1	8.9	2.2
Contractors and supervisors	6.0	4.0	2.0	2.4	1.8	0.6	6.1	4.6	1.5
Construction trades	9.3	6.4	2.8	4.6	3.6	1.1	11.6	8.9	2.6
Other trades	8.3	5.7	2.6	4.1	3.2	0.9	10.1	8.0	2.2
Transport equipment operators	7.8	5.7	2.1	5.0	4.1	0.8	12.4	10.3	2.0
Helpers and labourers	10.1	7.3	2.7	5.2	4.2	1.0	13.0	10.5	2.4
Occupations unique to primary industry	6.8	4.5	2.3	3.5	2.7	0.8	8.9	6.7	2.1
Occupations unique to production	10.0	7.1	2.9	5.1	4.1	1.0	12.8	10.4	2.5
Machine operators and assemblers	9.8	6.9	2.8	5.0	4.0	1.0	12.4	10.0	2.4
Labourers	10.8	7.8	3.0	5.7	4.7	1.1	14.4	11.7	2.7

1. Absent workers divided by total.
2. Hours absent divided by hours usually worked.
3. Inactivity rate multiplied by working days in year (250).
Source: Statistics Canada, Labour Force Survey.

Table 5 Absence rates for full-time employees by workplace size, job tenure, job status and union coverage, 2007, excluding maternity leave

	Incidence[1]			Inactivity rate[2]			Days lost per worker in year[3]		
	Total	Own Illness or disability	Personal or family respon-sibilities	Total	Own Illness or disability	Personal or family respon-sibilities	Total	Own Illness or disability	Personal or family respon-sibilities
		%			%			days	
Workplace size									
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
Under 20 employees	7.7	5.2	2.4	3.5	2.7	0.8	8.8	6.8	2.0
20 to 99 employees	8.9	6.2	2.7	4.0	3.1	0.9	10.0	7.8	2.2
100 to 500 employees	9.4	6.8	2.6	4.5	3.6	0.8	11.2	9.1	2.1
Over 500 employees	9.6	7.2	2.4	4.7	3.9	0.9	11.8	9.7	2.1
Job tenure									
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
1 to 12 months	7.9	5.4	2.5	3.1	2.3	0.8	7.8	5.7	2.0
Over 1 to 5 years	8.7	6.0	2.6	3.8	2.9	0.9	9.5	7.3	2.2
Over 5 to 9 years	9.2	6.4	2.8	4.5	3.5	1.0	11.2	8.7	2.6
Over 9 to 14 years	9.1	6.3	2.8	4.4	3.5	0.9	10.9	8.7	2.2
Over 14 years	9.2	7.0	2.2	4.9	4.2	0.7	12.2	10.5	1.7
Job status									
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
Permanent	8.9	6.3	2.6	4.2	3.3	0.9	10.4	8.3	2.1
Non-permanent	7.7	5.3	2.4	3.3	2.5	0.8	8.3	6.3	2.0
Union coverage									
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
Union member or covered by collective agreement	10.6	8.1	2.5	5.6	4.6	1.0	14.0	11.6	2.4
Non-unionized	7.8	5.3	2.5	3.4	2.6	0.8	8.4	6.4	2.0

1. Absent workers divided by total.
2. Hours absent divided by hours usually worked.
3. Inactivity rate multiplied by working days in year (250).
Source: Statistics Canada, Labour Force Survey.

Table 6 Absence rates for full-time employees by province, region and census metropolitan area (CMA), 2007, excluding maternity leave

	Incidence[1]			Inactivity rate[2]			Days lost per worker in year[3]		
	Total	Illness or disability	Personal or family respon- sibilities	Total	Illness or disability	Personal or family respon- sibilities	Total	Illness or disability	Personal or family respon- sibilities
Province and region		%			%			days	
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
Atlantic	8.7	6.5	2.3	4.3	3.6	0.7	10.8	9.0	1.8
Newfoundland and Labrador	7.6	5.7	1.9	3.9	3.3	0.6	9.8	8.2	1.6
Prince Edward Island	7.6	5.3	2.3	3.4	2.7	0.6	8.4	6.8	1.6
Nova Scotia	9.7	7.2	2.5	4.8	4.0	0.8	12.0	9.9	2.1
New Brunswick	8.6	6.3	2.2	4.2	3.5	0.7	10.5	8.8	1.8
Quebec	9.4	6.8	2.6	4.8	3.9	0.9	12.0	9.8	2.2
Ontario	8.5	5.8	2.7	3.7	2.9	0.9	9.3	7.2	2.2
Prairies	8.9	6.3	2.6	3.8	3.0	0.9	9.6	7.5	2.1
Manitoba	9.8	7.0	2.8	4.3	3.5	0.9	10.8	8.7	2.2
Saskatchewan	9.5	6.8	2.8	4.2	3.3	0.9	10.5	8.3	2.2
Alberta	8.4	5.9	2.5	3.6	2.8	0.8	9.0	6.9	2.1
British Columbia	8.1	6.1	2.0	4.0	3.3	0.7	10.1	8.2	1.9
CMA									
Both sexes	**8.8**	**6.2**	**2.5**	**4.1**	**3.2**	**0.8**	**10.2**	**8.1**	**2.1**
All CMAs	8.7	6.2	2.6	3.9	3.1	0.8	9.8	7.7	2.1
St. John's	9.0	6.8	2.2	4.5	3.8	0.7	11.3	9.5	1.8
Halifax	9.6	7.1	2.4	4.4	3.6	0.8	11.0	9.0	2.0
Saint John	9.2	6.6	2.5	4.5	3.7	0.8	11.2	9.2	2.0
Saguenay	8.9	6.3	F	4.8	4.0	F	12.0	9.9	F
Québec	8.5	6.1	2.5	4.2	3.4	0.8	10.6	8.5	2.1
Montréal	9.9	7.1	2.8	4.7	3.8	0.9	11.8	9.5	2.3
Trois-Rivières	8.6	6.0	F	4.0	3.1	F	10.0	7.8	F
Sherbrooke	8.3	6.2	F	4.4	3.6	F	10.9	9.1	F
Gatineau	11.7	8.1	3.6	5.3	4.0	1.3	13.3	10.1	3.3
Ottawa	10.8	7.4	3.4	4.3	3.2	1.1	10.7	8.0	2.8
Kingston	10.1	6.4	3.6	4.5	3.2	1.2	11.2	8.1	3.1
Greater Sudbury/ Grand Sudbury	9.5	6.8	F	4.3	3.4	F	10.8	8.5	F
Toronto	7.8	5.2	2.6	3.4	2.5	0.9	8.4	6.3	2.1
Hamilton	8.3	5.9	2.4	3.5	2.9	0.6	8.7	7.3	1.5
St. Catharines-Niagara	8.5	6.1	2.4	4.1	3.3	0.8	10.2	8.2	2.1
London	9.0	6.7	2.4	4.2	3.5	0.6	10.4	8.9	1.6
Windsor	8.9	6.0	2.9	4.2	3.3	1.0	10.6	8.2	2.4
Kitchener-Waterloo	8.5	5.7	2.9	3.3	2.6	0.8	8.3	6.4	1.9
Oshawa	8.5	5.9	2.6	3.8	3.0	0.8	9.6	7.6	2.0
Thunder Bay	10.7	8.0	F	5.8	4.8	F	14.6	12.1	F
Winnipeg	9.7	7.0	2.6	4.2	3.4	0.8	10.5	8.5	2.0
Regina	10.2	7.5	2.7	4.3	3.5	0.8	10.7	8.7	2.0
Saskatoon	8.8	6.3	2.5	3.6	2.8	0.8	9.0	7.1	1.9
Calgary	7.9	5.7	2.3	3.3	2.5	0.8	8.1	6.2	1.9
Edmonton	8.9	6.5	2.4	4.0	3.2	0.8	10.0	8.0	2.0
Abbotsford	8.3	6.4	F	4.7	3.9	F	11.7	9.6	F
Vancouver	7.2	5.3	1.9	3.4	2.7	0.7	8.6	6.8	1.7
Victoria	9.7	7.2	2.5	4.4	3.5	0.9	11.1	8.9	2.2
Non-CMAs	8.7	6.2	2.5	4.4	3.5	0.9	11.0	8.9	2.2
Urban Centres	9.0	6.6	2.4	4.4	3.6	0.8	11.0	9.0	2.0

1. Absent workers divided by total.
2. Hours absent divided by hours usually worked.
3. Inactivity rate multiplied by working days in year (250).
Source: Statistics Canada, Labour Force Survey.

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PERSPECTIVES

ON LABOUR AND INCOME

■ Departments

■ Articles

Katherine Marshall

In 2001, shareable parental leave benefits under the federal Parental
Benefits Program increased from 10 to 35 weeks, and in 2006
Quebec introduced its Parental Insurance Program. These changes
led to a significant increase in the number of fathers claiming paid
parental leave benefits. Between 2000 and 2006, the proportion of
fathers claiming parental benefits jumped from 3% to 20%. The
most common reasons for fathers not claiming the benefits were
family choice, difficulty taking time off work and financial issues.

Cara Williams

More than a quarter of employed Canadians work something
other than a regular daytime schedule—regular evenings or nights,
rotating or split shifts, casual or on-call jobs or irregular shifts. This
article focuses on shift work among full-time workers aged 19 to
64 and looks at where and among whom it is most prevalent.
Work-life balance, role overload and other indicators of well-
being are also examined.

Grant Schellenberg and René Houle

During their initial years in Canada, a significant minority of new
immigrants send money to family members in their country of
origin. The incidence of remitting among immigrants from different
countries ranges from less than 10% to over 60%, and the annual
amounts from about $500 to almost $3,000. While financial and
family characteristics are consistently significant with the remittance
activities of immigrants from all world regions, factors such as sex
and education are significant only for immigrants from some regions
but not others.

Highlights

In this issue

■ Fathers' use of paid parental leave   ... p. 5

- In 2001, the federal Parental Benefits Program increased shareable parental leave benefits from 10 to 35 weeks. In 2006, Quebec introduced its own Parental Insurance Program, including a five-week non-transferable leave for fathers. As a result, the proportion of fathers claiming paid parental leave increased significantly—from 3% in 2000 to 10% in 2001, and again from 15% in 2005 to 20% in 2006.

- In 2006, 56% of eligible fathers in Quebec claimed benefits for an average of 7 weeks compared with 11% of fathers outside Quebec who did so for 17 weeks.

- Fathers were significantly more likely to claim benefits if they lived in Quebec and if they had a co-claiming spouse who earned the same or more than they did. More than half of fathers outside Quebec who claimed parental leave benefits were the sole person in the household to do so.

- The most common reason for eligible fathers not claiming benefits was family choice (40%), followed by difficulty taking time off work (22%) and financial issues (17%).

- Internationally, 13 of 20 OECD countries have national paid parental leave programs with at least two weeks available to the father. Of these, 9 use legislation to encourage fathers' participation.

■ Work-life balance of shift workers   ... p. 15

- In 2005, about 4.1 million individuals aged 19 to 64 worked something other than a regular day shift; 2.3 million worked a rotating or an irregular shift schedule.

- Satisfaction with work-life balance was lower among shift workers than among regular day workers—while 76% of day workers were satisfied with their work-life balance, only 69% of shift workers were satisfied.

- Role overload, too much to do and not enough time to do it, occurred more frequently among shift workers, especially women.

- For both men and women, job satisfaction was positively associated with satisfaction with work-life balance and being able to avoid role overload.

- For men, working shift was associated with lower odds of being satisfied with their work-life balance, and shift work was a significant predictor of role overload for both women and men.

- For women, having a spouse and children or being a lone parent was associated with lower odds of being satisfied with work-life balance or avoiding role overload; for men, family type was significant only for role overload.

■ Remittances by recent immigrants   ... p. 27

- Within 6 to 24 months of landing, 23% of immigrants sent remittances to their home country, while 29% did so 25 to 48 months after landing.

- The incidence of sending money varied considerably by country of origin. Some 60% of immigrants from the Philippines and Haiti sent remittances 25 to 48 months after landing. About 40% to 50% of immigrants from Jamaica, Nigeria, Romania, Guyana and Ukraine sent money, but less than 10% of immigrants from France, the United Kingdom and South Korea did so.

- Of the immigrants who remitted 25 to 48 months after landing, those from 11 of 24 countries sent an average amount of between $1,700 and $2,200, while immigrants from 7 other countries sent between $2,700 and $3,700.

- The incidence of remitting was highest among those from countries with lower GDP per capita. During the 25 to 48 months after landing, around 36% of immigrants from countries with per capita GDP of less than $4,000 sent money home, compared with only 11% from countries with per capita GDP of $15,000 or more.

- Financial capacity and family obligations are correlated with the likelihood of sending remittances. Immigrants who had family incomes of $70,000 or more were more than three times as likely to send money home as those with family incomes of less than $10,000. Immigrants with three or more children at home were far less likely to send money abroad than those with no children.

A profile of the Canadian Forces   ... p. 39

- After a steady decline in the 1990s, the number of personnel in the Canadian Forces has increased since 2001. In 2006, the CF comprised 64,000 full-time regular force members and 24,000 reservists.

- Compared with civilian workers, CF members are much younger (more than 70% under age 40 versus only 53% of civilian workers), predominantly male (85% vs. 53%) and white (94% vs. 83%).

- Education and income levels of CF personnel have significantly increased over the past decade. Almost 70% of reservists had postsecondary graduation and average earnings of regular forces personnel were higher than those of other public sector employees.

- Compared with the overall working population, CF members reported higher rates of life (5%) and job dissatisfaction (13%), job strain (28%), major depression (7%), and self-perceived negative mental health (8%).

Changes in family wealth   ... p. 53

- The overall debt-to-income ratio for Canadian families climbed from 1.02 in 1999 to 1.21 in 2005 as the average debt jumped by one-third from $62,700 to $82,500, but income increased by only one-tenth from $61,600 to $68,100.

- In both years, the proportion of families carrying debt peaked at over 80% when the family's major income recipient was in their 30s and fell below 20% when major income recipient was 75 or over.

- Despite a heavier debt load in 2005, families were wealthier on average than in 1999 as net assets rose from $281,000 to $380,700. The increase was almost evenly divided between non-financial and financial holdings.

- Overall, neither the distribution nor the inequality of wealth changed between 1999 and 2005 even though more families were worth at least one million dollars and fewer were wholly dependent on government transfers.

What's new?   ... p. 65

- **From Statistics Canada**

  Activity limitations and employment

  Relative productivity levels in Canada and the U.S.

  Labour productivity

  2006 Census: Shelter costs

  Hours worked and labour productivity in the provinces and territories

  Canada's immigrant labour market

  2006 Census: Earnings and income

- **From other organizations**

  Youth labour market performance: Canada versus the OECD

  The Francophone/Anglophone wage gap in Canada

  Wage and productivity stability in U.S. manufacturing

  Time use of working parents in the U.S.

Fathers' use of paid parental leave

Katherine Marshall

lthough the objectives of international paid leave programs are not identical, one universal goal is to help families balance or reconcile work and family responsibilities—which in turn is intended to increase the well-being of children. To this end, emphasis has been put on extending leave time for parents and encouraging the father's involvement. Research has shown that a father's involvement has a positive effect on co-parenting and partner relationships, personal development, and the social, emotional, physical and cognitive development of children (Allen and Daly 2007). Even short-term paid leave for fathers has been linked to positive outcomes, which can set the stage for longer-term involvement (Moss and O'Brien 2006).

As is the case in many other Organisation for Economic Co-operation and Development (OECD) countries, Canada's paid parental leave policies have changed considerably in recent years. Two key changes to the federal Parental Benefits Program (PBP) in 2001 were the increase in the number of shareable paid benefit weeks per family from 10 to 35 and the elimination of a second two-week unpaid waiting period. In 2006, Quebec began administering its own separate Parental Insurance Plan (QPIP) offering, for example, higher benefit rates, no unpaid waiting period and a five-week non-transferable paternity leave.

This article uses the 2006 Employment Insurance Coverage Survey (EICS) to examine fathers' use of paid parental leave in Quebec and the other provinces. Recent revisions to the questionnaire enable the assessment of how parental leave is shared by spouses, as well as the number of weeks of paid leave the father uses and reasons for not claiming parental leave benefits (see *Data source and definitions*).

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Many European programs actively encourage paternal participation

Fathers' participation in parental leave programs and the time taken have become a prominent area of public policy debate and development in many OECD countries (Moss and O'Brien 2006). Some countries have used legislation as a method to help raise the parental leave take-up rate among fathers. This has been done mainly by creating individual, non-transferable periods of leave for each parent as well as additional time that can be used by either parent (see *International comparisons*). Countries with this form of program include Belgium, Iceland, Luxembourg, Norway and Sweden. In other countries, the entire parental leave period can be used by either or both parents, but additional or bonus weeks of paid leave are offered if the father claims some of the leave (e.g. Austria, Finland, Germany and Italy).

Not surprisingly, countries with the highest paternal participation rates include those with non-transferable leave programs that also offer high-wage replacement rates, mainly Nordic countries—Sweden (90% participation rate), Norway (89%) and Iceland (84%). Parental leave take-up rates are lower for fathers and mothers in countries where the earnings replacement rate is low, regardless of the type of leave program—Belgium has a paternal participation rate of under 7%, Austria, 2% and France, 1%. In other words, since most countries do not replace all earnings for parents on leave, and since men, on average, earn more than women, families may be dissuaded from having the father claim parental leave because of the greater financial burden (Moss and O'Brien 2006). However, at the same time, the economic stability of the family is recognized as another key factor in the well-being of children.

Canadian programs have also evolved

Since 1971, mothers with enough insurable weeks of employment have been able to claim up to 15 weeks of paid maternity leave—considered special benefits under the current Employment Insurance Program (EI). In 1990, the Parental Benefits Program (PBP) introduced 10 weeks of paid leave available for sharing by qualifying parents for the care of their newborn. Further amendments to the EI Act (December 31, 2000) effective in 2001 extended PBP benefits to 35 weeks, eliminated the second two-week waiting period if both parents wanted to use some of the leave, reduced the required number of annual employment hours from 700 to 600 and allowed earnings up to 25% of benefits per week without reduction.[1] The PBP is deemed a core component of the National Children's Agenda and, as in other countries, is designed to "promote child development" and help parents "balance the demands of work and very young children" (HRSDC, 2005). An evaluation of these changes found positive outcomes related to the aforementioned objectives, including the length of leave taken, the length of breastfeeding, and the quality of parent and child interactions (HRSDC 2005).

Another social objective[2] of the enhanced PBP is to "promote gender equality" by advancing the uptake rate of fathers and the sharing of benefits between spouses (HRSDC 2005). It is generally expected that an increase in fathers' use of paid parental leave will help break down gender stereotypes, in turn helping to achieve gender equity. For example, assumptions that only mothers use parental leave "can fuel employment discrimination against the recruitment and promotion of women" while at the same time making it difficult for fathers to take leave because it "conflicts with workplace cultures and expectations about the

International comparisons

Consistent data on international practices regarding paid paternity and parental leave are difficult to find. Collection methods, program rules and regulations, and presentation of the results vary considerably. However, despite the challenges, interest in the subject is mounting and concerted efforts have recently been made to make international comparisons. For example, the International Network on Leave Policy and Research, established in 2004, produces an annual report on maternity, paternity and parental leave policies in over 20 countries. Recent international research from several sources is presented below. Thirteen of the 20 OECD countries under consideration offer paid paternity or parental leave of at least two weeks to fathers. Seven countries do not have such leave, including Australia, the United Kingdom and the United States. Belgium, Iceland, Luxembourg, Norway and Sweden offer non-transferable leave to both mothers and fathers. Denmark used to have non-transferable parental leave for fathers until 2002, when legislation changed the two-week period back to 'family' benefits. In Canada, Quebec offers an exceptionally long non-transferable paternity leave of 5 weeks.

International comparisons (concluded)

Selected OECD countries with more than two weeks of statutory paid paternity or parental leave available to fathers

	Paid paternity	Paid parental leave			
		Allocation[1]	Earnings replacement	Take-up[2]	Special incentives for fathers
Austria 2006	None	18 months, family	Flat rate (low benefits)	2%	6 extra months
Belgium 2006	10 days	24 weeks: 12, mother; 12, father	Flat rate (low benefits)	<7%	
Canada 2006					
Quebec	5 weeks	32 weeks, family	55-75%	48%	
Rest of Canada	None	35 weeks, family	55%	10%	
Denmark 2006	2 weeks	32 weeks, family	Unemployment benefit rate	62%	
Finland 2005	3 weeks	26 weeks, family	43-82%	10%	2 extra weeks
France 2006	11 days	36 months, family	Flat rate (half minimum wage)	1%	
Germany 2007	None	12 months, family	67%	9%	2 extra months
Iceland 2005	None	9 months: 3, mother; 3, father; 3, family	80%	84%	
Italy 2006	None	10 months, family	30%	7%	1 extra month
Luxembourg 2006	2 days	12 months: 6, mother; 6, father	Flat rate (minimum wage)	17%	
Norway 2006	None	54 weeks: 9, mother; 6, father; 39, family	80-100%	89%	
Portugal 2006	5 days	15 days, father	100%	30%	
Sweden 2006	2 weeks	68 weeks: 8, mother; 8, father; 52, family	80%	90%	

1. Family leave can be shared between parents; leave by sex is non-transferable (if a parent does not use the leave, it is forfeited).
2. Although this is meant to refer to fathers' participation rate in parental leave, as in the case of Quebec, it is not always clear if a distinction has been made between paternity and parental leave.
Sources: Anxo et al. (2007); Moss and Wall (2007); European Commission (2006); Moss and O'Brien (2006); Plantenga and Remery (2005); websites www.stakes.fi and www.dw-world.de.

appropriate behaviour for men" (Anxo et al. 2007). The PBP change to eliminate the second two-week waiting period for co-claiming parents was intended to give parents more choice and to encourage the sharing of work and family responsibilities. It also allowed for a "significant reduction in the cost to a father hoping to take just a few weeks of benefits" (Phipps 2006). Indeed, research has shown an increase in benefit-sharing since the most recent PBP revision (HRSDC 2005; Marshall 2003).

In March 2005, Quebec reached an agreement with the federal government to run its own, substantially different, parental leave program. One main variation in the basic Quebec Parental Insurance Plan (QPIP) is the inclusion of a five-week individual, non-transferable paternity leave paid at 70% of previous earnings. Other major differences in the QPIP, which came into effect in January 2006, include coverage for the self-employed, higher rates of pay for maternity leave and parental leave and no minimum number of hours worked in order to qualify for leave (see *Details of the PBP and the QPIP*).

One in five fathers claims benefits

The proportion of fathers taking time off and receiving paid parental leave benefits has increased sharply, from 3% in 2000 to 20% in 2006 (Chart A). The 2006 rate actually jumps to almost one in four (23%) if ineligible fathers (those without enough paid work hours or the self-employed outside Quebec) are excluded from the calculation.[3] However, whether paid or not, the majority of fathers take some time off when children are born. Recent research found that 55% of fathers were absent from their job around the time of their child's birth, with many using short-duration annual vacation leave (21%) or unpaid leave (11%) (Beaupré and Cloutier 2007).

The change over time in fathers' uptake of parental benefits is noticeably tied to the rules of the program. Perhaps because of the relatively short duration of leave available prior to 2001 (10 weeks), and the rule requiring both qualifying parents to undergo an unpaid two-week waiting period, very few fathers participated—only 3% in 2000. However, after paid benefits were extended to 35 weeks and the two-week waiting period was applied to only one parent, the proportion of fathers filing for parental leave benefits jumped to 10% in 2001. Apart from rule changes, rising take-up rates by fathers may also be influenced by a cultural shift that embraces fatherhood and men's

Chart A   One in five fathers now file for parental leave benefits

% claiming maternity[1] or parental leave
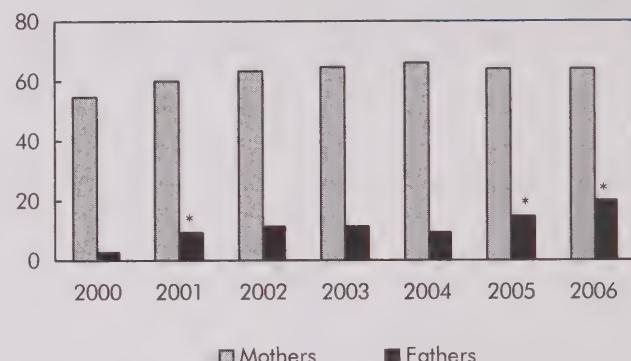
* significant difference from the previous year at the 0.05 level
1. Available only to mothers.
Source: Statistics Canada, Employment Insurance Coverage Survey.

involvement with their children (Daly 2004). In-depth qualitative analyses have shown that views of traditional mothering and fathering roles are changing in Canada (Doucet 2006). Further examples of this shift include the significant increase in fathers' participation in and time spent on primary child care, and the jump in the proportion of fathers as the stay-at-home parent in single-earner families (Marshall 2006). Yet another indicator of fathers' evolving role in caregiving is the increase in the average number of days they miss from work for personal or family responsibilities when preschool children are in the household—for example, up from 1.8 days in 1997 to 6.3 days in 2007 (Statistics Canada 2008). The corresponding numbers for women were 4.1 and 4.8.

The significant rise in the rates of fathers claiming parental leave in 2005 (15%) and 2006 (20%) is mainly attributable to the introduction of the QPIP and the subsequent increase in the participation of Quebec fathers. On the other hand, the take-up rate for mothers has remained steady in recent years at just over 60%.

More Quebec fathers claim—but for shorter periods

Without doubt the QPIP had a profound influence on fathers' use of paid leave in Quebec. Of those eligible for the program, 56% claimed benefits in 2006, up from 32% in 2005 (Table 1). The participation rate

Table 1 Eligible fathers claiming paternity or parental leave and weeks taken

	Total	Quebec	Elsewhere
Couples with eligible fathers		'000	
2004	244	57	188
2005	263	67	196
2006	271	73	198
Fathers' claim rate		%	
2004	12	22* E	9
2005	18(*)	32*	13
2006	23	56*(*)	11
Mother receiving maternity or parental leave			
Yes[1]	25	64*	8 E
No	19	F	18 E
Average weeks off[2]		weeks	
2005	12	13 E	11
2006	11	7*(*)	17*
Mother receiving maternity or parental leave			
Yes	7	6*	13 E
No	22	F	22

* significant difference between Quebec and the other provinces at the 0.05 level
(*) significant difference from previous year at the 0.05 level
1. In 2006, mothers in Quebec were more likely to receive maternity or parental benefits (77%) than those living elsewhere (62%).
2. Of those who claimed. Fathers' time off was not asked in 2004.
Source: Statistics Canada, Employment Insurance Coverage Survey, 2004 to 2006.

for fathers outside Quebec remained steady over the three years examined, at around one in ten.[4] However, even though the parental leave benefit program was the same across Canada prior to 2006, Quebec had a consistently higher proportion of fathers claiming benefits, perhaps representing some cultural differences.

Furthermore, an above-average proportion of Quebec fathers claimed paid benefits if their partner was also a recipient (64% versus 56%), whereas fathers outside Quebec were less likely to claim if their partner claimed (8% versus the overall average of 11%). Although sample size restricted a detailed analysis, the different patterns are likely linked to the reasons the mothers were not in receipt of benefits. Perhaps as a result of the varying eligibility rules of the PBP and QPIP programs, women in Quebec are more likely to receive benefits than women in other provinces (77% versus 62%). For example, self-employed workers are covered in Quebec and no minimum weeks of work are required for eligibility (see *Details of the PBP and the QPIP*). In non-claiming Quebec couples in 2006, both

partners may have been unaware of the new paternity leave. For example, of those who stated "Did not know he could claim benefits" as the main reason for not filing (representing 8% of all couples where the father did not claim), the vast majority (86%) were in couples where the mother did not receive benefits.

For the mothers not in receipt of benefits in the rest of Canada (38%), many would have been employed but not eligible because of too few hours worked or being self-employed, and research shows that women in these situations take less time off from work than those employed and with benefits (Marshall 2003). Therefore, the fathers in these couples may be more inclined to participate in the PBP program so that at least one of the partners uses some of the available benefits. For example, one in five fathers outside Quebec (18%) filed for parental leave benefits when their spouse did not claim, for an average duration of 22 weeks.

In terms of time taken, the average benefit weeks fathers claimed in Quebec was 13 in 2005 and 7 in 2006. Although the survey did not differentiate between paternity and parental leave benefits, it seems that in 2006 most men in Quebec used all the non-transferable paternity benefits (maximum of 5 weeks available), but only a minority opted to use some of the 32 additional weeks available to either parent. Of the eligible fathers in Quebec who claimed, three-quarters received benefits for five weeks or less (Chart B).

Chart B Three-quarters of Quebec fathers claimed benefits for five weeks or less

Cumulative distribution (%)
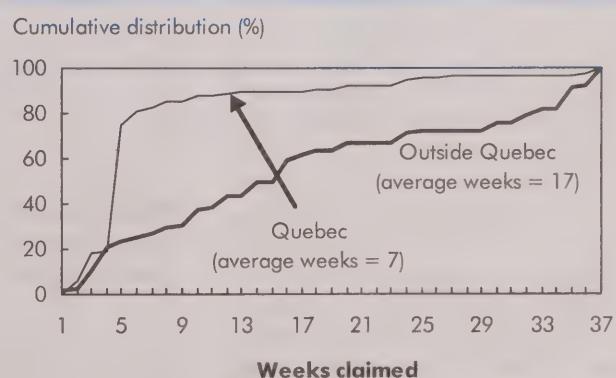
Source: Statistics Canada, Employment Insurance Coverage Survey, 2006.

Details of the PBP and the QPIP

As of January 1, 2006, the Quebec Parental Insurance Plan (QPIP) replaced the federal Employment Insurance Parental Benefits Program (PBP) for the administration of paid benefits associated with birth or adoption for parents in that province.

Below is a summary of the benefits and rules for the two programs in 2006. (More detailed information on the two programs can be found on the respective government websites: www.rqap.gouv.qc.ca and www.hrsdc.gc.ca; also see Phipps 2006.)

Parental benefits program	Parental insurance program (basic plan)[1]
Birth mothers	
• 15 weeks of maternity leave	• 18 weeks of maternity leave
• 55% of average earnings up to a maximum of $39,000 in 2006 ($413 per week)	• 70% of average earnings up to a maximum of $57,000 in 2006 ($767 per week) (adjusted every year)
• two-week waiting period	• no waiting period
• requires 600 hours of paid work in past year	• requires at least $2,000 of earnings in past year
• self-employed excluded	• covers salaried and self-employed
• non-flexible	• some flexibility[1]
Birth fathers	
• not applicable	• 5 weeks of paternity leave
All parents (birth and adoptive)	
• 35 weeks of parental leave	• 32 weeks parental leave for birth parents
• taken by one or shared by both	
• same rules as maternity leave but no second waiting period required	• 37 weeks parental leave for adoptive parents
	• taken by one or shared by both parents
	• same rules as maternity except for benefit rate: 7 weeks at 70%, rest at 55% for birth parents; 12 weeks at 70%, rest at 55% for adoptive

1. Parents can choose between the basic or the special plan. In all types of benefits—maternity, paternity, parental or adoption—the special plan offers fewer benefit weeks (15, 3, 25 and 28, respectively) at an income-replacement rate of 75%.

Perhaps because paternity and parental benefits are listed as separate programs, men in Quebec are more inclined to participate in only one. The situation outside Quebec is reversed—among fathers who claimed, the average time off actually rose from 11 weeks in 2005 to 17 weeks in 2006, representing almost half of the parental leave time available. This relatively long duration likely arose because more than half of claiming fathers outside Quebec were the sole claimant in the household.

Main income earner also influences fathers' participation

Many factors can influence an eligible father's decision to use available parental leave. An analysis of 30 European programs found five main determinants of take-up rates by fathers—payment level (financial impact), organizational and social culture (expected roles for men and women), program flexibility (when and how leave can be taken), labour market (employer attitude and perceived career advancement), and educational level of parents (Plantenga and Remery 2005). The data in this study allowed an examination of education and income-related factors, and although it could not address the subtler issues of cultural and employer attitudes, the survey did include one question about why the father did not file for benefits. These characteristics of eligible fathers using parental leave were examined in a logistic regression model. Separate models were run for fathers inside and outside Quebec.

Participation in the federal PBP has a potentially greater financial impact on a family than does the basic QPIP because of the earnings replacement rates—55% and 70% respectively. Although some employers offer supplementary top-ups to compensate for reduced earnings, the majority of parents on paid leave do not receive such income. In 2006, 21% of mothers in receipt of parental leave benefits also reported receiving an employer top-up—29% in Quebec and 17% outside Quebec.[5] The more generous non-transferable paternity benefit in Quebec is probably part of the reason the regression results show fathers in that province to be 10 times more likely to claim benefits than fathers living in other provinces (Table 2).

Although the proportion of fathers claiming parental leave benefits is higher when either partner has a college-level education or above, controlling for income factors such as household income before birth,

Table 2 Eligible fathers' participation in paid parental leave (PL)

	Total	Claimed PL[1]	Odds ratio[2] Overall	Odds ratio[2] Quebec	Odds ratio[2] Outside Quebec
	'000	%			
Total	**271**	**23**	...	...	...
Quebec	73	56	10.2*	...	...
Elsewhere (ref)	198	11	1.0	...	...
Father's education					
College diploma or above	147	26	1.2	1.2	1.2
Less than college diploma (ref)	124	19	1.0	1.0	1.0
Mother's education					
College diploma or above	183	27	1.4	1.5	1.2
Less than college diploma (ref)	88	16	1.0	1.0	1.0
Household income month before birth					
Less than $2,500 (ref)	60	23ᴇ	1.0	1.0	1.0
$2,500 to $4,999	109	23	1.1	0.8	0.9
$5,000 or more	93	23	1.1	1.2	0.7
Mother receiving PL	189	25	...	...	...
Earns less than father (ref)	102	20	1.0	1.0	1.0
Earns the same or more than father	55	37	2.5*	3.5*	2.5
Earning ratio not known	31	F	1.3	2.7	0.8
Mother not receiving PL	83	19	1.5	0.3	3.4*

* statistically significant from the reference group (ref) at the 0.05 level
1. Excludes fathers whose claim status is unknown.
2. This logistic regression calculation indicates whether certain variables significantly increase or decrease the chances (odds) of the father claiming parental leave benefits.
Source: Statistics Canada, Employment Insurance Coverage Survey, 2006.

maternal receipt of maternity/parental benefits and the mother's earnings relative to the father's shows that education does not make a significant difference.

The average household income in the month prior to the birth or adoption also does not appear to make a difference, as households in all income ranges reported roughly the same take-up rates by fathers. This particular income measure may not reflect the true usual monthly income since some mothers may already have been off work in the month prior to the birth. However, another factor supporting the finding is that an equal proportion of all household types reported "money-related matters" as the main reason the father did not claim benefits. Overall, roughly one in five households from each of the different income groups reported finances as the main reason (data not shown).

Another financial consideration is the income a family will lose when one or both parents choose to stay home, with or without paid benefits. Unless individuals receive an employer top-up, or they choose not to take a break from work, the income of most families will decrease after birth.[6]

In couples where the mother earned the same as or more than the father and received benefits, 37% of fathers claimed some of the parental leave benefits. After controlling for household income and level of education, fathers in these families were 2.5 times more likely to file for benefits than those in families where the mother received benefits but earned less than the father. This strongly suggests that some families take into account whose salary reduction will be larger before deciding who will file for benefits in order to minimize the loss, but that overall household income level does not make a difference. If the income loss is equal or higher if the mother stays home, couples are more likely to share the benefits. In other words, in terms of a father's participation in the PBP or QPIP program, total family income is not as important as how much the family will lose if the father rather than the mother stays home. This finding is significant at the 0.004 level for all couples, the 0.05 level for couples in Quebec and 0.09 for those outside Quebec.

Finally, regression analysis confirms that fathers outside Quebec are more likely to claim benefits if their partner does not claim benefits. After controlling for other factors, fathers outside Quebec were 3.4 times more likely to claim parental leave if their spouse did not claim leave than fathers with spouses who claimed and earned less.

Social factors also important

When asked why their eligible spouse did not apply for parental benefits, 4 in 10 mothers reported that it was the preferred arrangement of the mother or the family

Chart C Eligible fathers not claiming most commonly did so by choice
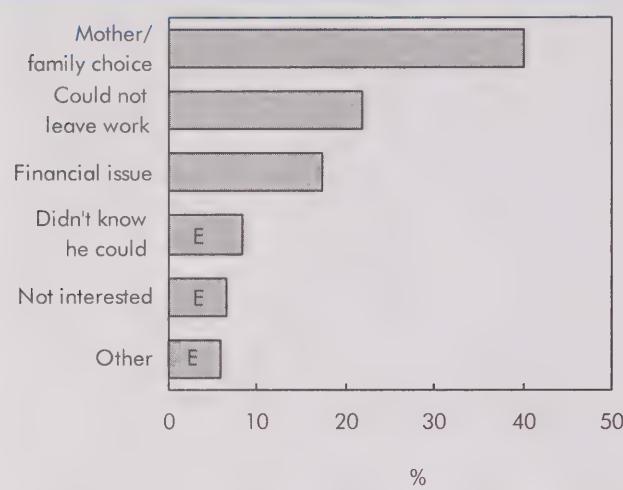
Note: The reason was reported by the mother.
Source: Statistics Canada, Employment Insurance Coverage Survey, 2006.

(Chart C). Some common responses in this category included: the mother wanted to take all of the weeks; it was more practical; the mother was nursing; and it was a personal decision. A decision based on individual preference is complex and difficult to predict since it is often influenced by emotions, attitudes and expectations. As shown, a family decision on whether the father claims some of the parental benefits is not based entirely on income and earnings considerations.

However, apart from preference, a sizeable minority of other reasons were given for fathers not claiming. The second most common was that it was impossible to take time off from work (22%). Although not specified, this could reflect logistical problems in taking a break from work, or a perception that the employer would not permit it. Other main reasons included finances (17%), no knowledge of the program (8%) and lack of interest (7%).

Claim patterns vary

Other information in the survey included the timing of the father's parental leave claim in relation to the mother's. Among couples where the father claimed

benefits, in roughly half the spouses claimed at the same time, in one-quarter they claimed at different times, and in one-quarter only the father claimed—with co-claiming fathers taking an average of 6 weeks off and sole-claiming fathers, 22 weeks (Table 3). However, this overall pattern masks considerable differences between Quebec and the rest of Canada.

In the majority of couples in Quebec (70%), the father claimed benefits at the same time as the mother for an average of 6 weeks; in the majority of couples outside Quebec (79%), the father was not claiming benefits at the same time as the mother and they claimed for an average of 20 weeks. In fact, 55% of fathers outside Quebec who claimed had a wife who did not claim benefits.

Conclusion

Paid leave programs are intended to help parents balance work and family responsibilities. As well as extending leave, many countries view increased paternal involvement as another means of reaching this goal. To encourage fathers' participation in paid parental leave, some countries have made program rules more flexible, offered bonus weeks as incentive for fathers, or created non-transferable paternal leave periods.

Table 3 Claim patterns for couples where the father claimed parental leave

	Total	Quebec	Elsewhere
Total	**62,200**	**39,800**	**22,400**
		%	
Claimed same time as mother	53	70	F
Did not claim with mother	47	30	79*
Only father claimed	26	F	55
Claimed separately	22	F	F
	Average weeks off[1]		
Overall	**11**	**7**	**17***
Claimed same time as mother	6	6	F
Did not claim with mother	16	11	20*
Only father claimed	22	F	22
Claimed separately	10E	F	F

* significant difference from Quebec at the 0.05 level
1. Excludes cases where the length of claim time is unknown.
Source: Statistics Canada, Employment Insurance Coverage Survey, 2006.

In 2001, the federal Parental Benefits Program increased the length of shareable paid parental leave benefits from 10 to 35 weeks and eliminated the second two-week unpaid waiting period for co-sharing parents. Shortly after these changes were made, mothers increased the time they stayed at home and fathers increased their overall participation rate from 3% in 2000 to 10% in 2001 (Marshall 2003).

In 2006, Quebec introduced its own Parental Insurance Plan, which included higher benefit rates, no unpaid waiting period, and a five-week non-transferable leave for fathers. One result of these changes was a jump in the proportion of eligible fathers in Quebec claiming benefits from 32% in 2005 to 56% in 2006, compared with just 11% for fathers outside Quebec.

On the other hand, fathers in Quebec claimed an average of 13 benefit weeks in 2005 and 7 in 2006, whereas fathers outside Quebec increased their time from 11 to 17 weeks. The 2006 finding in Quebec is clearly linked to the large increase in fathers participating in only the five-week paternity program. The reason for the increase in the weeks of leave for fathers outside Quebec is less obvious.

Some families take the potential income loss of the higher-earning spouse into account before deciding who takes the benefits. Fathers across Canada were 2.5 times more likely to claim benefits if they had a co-claiming spouse who earned the same or more than those with a co-claiming spouse who earned less. Finally, fathers outside Quebec were 3.4 times more likely to claim if their spouse did not claim, suggesting that when a family is at risk of not receiving any benefits (which is more often the case outside Quebec), fathers significantly increase their participation rate.

The evolving parental leave programs correspond with ongoing employment and social changes, including the growth in dual-earner couples, increasing expectations that men be involved with the care of children and an increasing awareness of quality of life beyond work issues (Moss and O'Brien 2006). Indeed, research in Canada has shown that spouses are increasingly sharing financial, household and child care responsibilities (Marshall 2006). One in five fathers taking paid parental leave is yet another indicator that dual-earner families are becoming dual-carer as well.

Perspectives

Notes

1. See Phipps 2006 for a more detailed history of Canada's maternity and parental leave programs.

2. In addition to its social objectives, the economic objectives of the PBP are to allow business to retain valuable, experienced employees, and make short-term investment for long-term economic gain (HRSDC 2005).

3. Based on the mother's reporting of spousal ineligibility (see *Data source and definitions*). The remainder of the paper focuses on eligible fathers.

4. In 2006, the overall take-up rate by all fathers, eligible or not, was 48% in Quebec and 10% outside Quebec.

5. Whether a mother received a top-up was tested in the regression models and found to be not significant. Information on employer top-up rates for fathers was not collected.

6. In 2006, among couples where at least one parent claimed benefits after the birth, 72% reported a drop in monthly income averaging $1,300. Only 27% of couples where neither parent claimed benefits reported an income reduction, but for those who did report a drop, the average was $1,700. Most non-claiming families (73%) do not experience an income drop because they either were not in the labour force prior to the birth, or were employed but ineligible for benefits and therefore less likely to take a break from working. However, some families take a break even if they are not entitled to benefits, making the time away from work even more costly.

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Work-life balance of shift workers

Cara Williams

Working 9 to 5 may be what many consider a normal full-time job. However, in an economy that often demands 24/7 activity, shift work remains common. At the same time, however, the labour force is aging and work-life balance is increasingly important to workers.

Working shifts can have negative health effects, and complicate the scheduling of family activities (Halpern 2005, Levin-Epstein 2006, Rosa and Colligan 1997, Costa 2003, Shields 2002). Additionally, because shift work is rarely restricted to weekdays, finding child care on weekends or making plans for holidays and social activities can be difficult. Conversely, for some, working shifts may reduce the need for child care and may ensure that a parent is available to get children ready for school in the morning, greet children after school or provide elder care—thereby reducing work-life conflict (Marshall 1998).

This article examines the prevalence and types of shift work among persons between the ages of 19 and 64 with full-time jobs. It also examines the hours spent on other activities like unpaid work or time with family members. Work-life

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balance, role overload and other indicators of well-being are examined for differences across shifts. Finally, multivariate analysis is used to assess the impact of work schedules and demographic and socioeconomic variables on work-life balance and role overload for men and women (see *Data source and definitions*).

Rotating and irregular shifts most common

Shift work has changed through the years (see *Shifts over time*). Today, it comprises regular night and evening work, rotating and split shifts, casual/on-call jobs, and irregular shifts. In this article, working shift will refer to anything other than a regular daytime schedule.

In 2005, approximately 28% (4.1 million) of the 14.6 million employed Canadians worked

something other than a regular day shift (Table 1); the vast majority (82%) worked full time (30 or more hours per week). While women made up approximately 37% of all full-time shift workers, almost 7 in 10 part-time shift workers were women. Because work-life conflict and role overload are more likely to affect full-time workers, this article will focus mainly on such individuals (see *Part-time workers*).

In 2005, rotating shifts and irregular schedules were the most common types of shift work, accounting for 2.3 million full-time workers (Table 2), even though these are considered among the most difficult shifts because the body cannot properly adjust to the sleep pattern changes, rotating child care is difficult to find and health effects can be profound (Costa

Table 1   Workers aged 19 to 64 by shift and work status

	All workers			Regular day			Shift workers		
	Both sexes	Men	Wo-men	Both sexes	Men	Wo-men	Both sexes	Men	Wo-men
	'000	%		'000	%		'000	%	
Total[1]	**14,640**	**55**	**45**	**10,547**	**54**	**46**	**4,068**	**57**	**43**
Full-time	13,139	58	42	9,774	57	43	3,347	63	37
Part-time	1,494	26	74	773	22	78	721	31	69

1. Includes unknown work schedules.
Source: Statistics Canada, General Social Survey, 2005.

Data source and definitions

Every year since 1985, the **General Social Survey (GSS)** has interviewed Canadians aged 15 and over in the 10 provinces on a wide range of issues. This paper examines GSS time-use data collected using a 24-hour time diary. In 2005 the sample size was 19,600. The target population of this study was persons aged 19 to 64 at the time of the survey who worked full time (30 hours per week or more). Students were excluded.

Shift work comprises
- regular evening schedules
- regular night schedules
- rotating shifts (those that change periodically from days to evenings or to nights)
- split shifts (two or more distinct periods each day)
- on call or casual (no prearranged schedules—for example, substitute teachers).
- irregular schedule (changes, but usually prearranged one week or more in advance—for example, pilots)
- Other, non-day schedules

Non-shift work is any regular daytime schedule.

Work-life balance is a self-perceived notion. The 2005 GSS determined satisfaction with work-life balance by asking

"Are you satisfied or dissatisfied with the balance between your job and home life?"

The **role overload** variable was constructed using five indicators of overload. The questions used were:

1. When you need more time do you tend to cut back on your sleep?
2. At the end of the day, do you often feel that you have not accomplished what you had set out to do?
3. Do you worry that you don't spend enough time with your family or friends?
4. Do you feel that you're constantly under stress trying to accomplish more than you can handle?
5. Do you feel that you just don't have time for fun any more?

Respondents who answered yes to four or more questions were considered to suffer from role overload.

Average time spent on activities (time use) refers to the total time spent on a given activity divided by the population, and averaged over a seven-day week. The time spent by participants refers to only those who participated in that activity on diary day, and also averaged over seven days.

2003, Rosa and Colligan 1997). Some 385,000 full-time workers had regular evening shifts and approximately 270,000 had regular night shifts. On call/casual schedules accounted for just over 100,000 workers and split schedules about 130,000.

Table 2 Shift workers aged 19 to 64

	Both sexes	Men	Women
	'000	%	%
Evening	523	49.4	50.6
Full-time	385	56.2	43.8
Night	309	60.3	39.7
Full-time	270	63.1	36.9
Rotating	1,345	54.5	45.5
Full-time	1,215	58.2	41.9
Split	160	52.6	47.4
Full-time	131	58.2	41.8
On call or casual	191	51.9	48.1
Full-time	102	67.6	32.4ᴱ
Irregular schedule	1,324	62.5	37.5
Full-time	1,052	70.1	29.9
Other	217	61.9	38.1
Full-time	192	64.7	35.3

Source: Statistics Canada, General Social Survey, 2005.

Occupation, industry and shift

Certain occupations are more commonly associated with shift work because of the nature of the jobs— for example, those occupations providing services 24 hours per day such as doctors, nurses and police officers. Additionally, some manufacturing jobs are also associated with shift work since some firms operate 24 hours per day. The 2005 General Social Survey confirmed this—for example, about 45% of those working in health occupations were shift workers, as were 66% in protective service occupations (police, security guards). Other occupations where shift work was relatively common were sales and service (40%) and those unique to primary industries (42%). Conversely, less than 10% of natural and applied sciences and 12% of business, finance and administrative jobs entailed shift work (Table 3).

Not surprisingly, just as certain occupations are more likely to be tied to shifts, so too are certain industries. This may be because they offer services at non-traditional work times or involve continuous production. Health care, accommodation and transport industries come to mind when thinking about shift work. Indeed, in 2005 more than 50% of full-time workers in the accommodation and food industry worked

Table 3 Full-time workers aged 19 to 64 by occupation, industry and shift

	Total workers	Regular day	Shift
Industry	'000	%	
Agriculture, forestry, fishing and hunting	230	65.3	34.7
Mining, oil and gas extraction	302	67.7	32.6
Utilities	121	89.7	10.3
Construction	888	84.1	15.9
Manufacturing	1,717	73.2	26.8
Trade	1,716	73.8	26.3
Transportation and warehousing	650	60.5	39.5
Finance and insurance	904	81.9	18.1
Professional, scientific and technical	1,079	86.8	13.2
Business, building and other support	448	63.9	36.1
Educational services	817	89.5	10.5
Health Care and Social Assistance	1,272	68.0	31.9
Information, culture and recreation	607	62.3	37.7
Accomodation and food	620	47.3	52.7
Other services	544	75.6	24.4
Public administration	831	80.7	19.3
Occupation			
Management	1,275	80.1	19.9
Business, finance and administrative	2,479	87.9	12.1
Natural and applied sciences	1,097	90.7	9.3
Health	690	54.7	45.3
Social science and education	990	84.9	15.1
Art, culture, recreation and sport	426	66.3	33.7
Sales and service	2,573	60.5	39.5
Trades, transport and equipment operators	1,900	72.2	27.8
Unique to primary	420	58.5	41.5
Unique to processing, manufacturing and utilities	886	63.3	36.7

Source: Statistics Canada, General Social Survey, 2005.

something other than a regular day schedule. About 4 in 10 workers in information, culture and recreation, as well as transportation and warehousing worked shifts. However, in some industries the vast majority of workers worked only a regular daytime schedule—for example, education, professional and scientific services, utilities and construction.

Demographics and shift

While women make up about 42% of all full-time workers, their share of shift work is slightly lower at about 37%, with only slight differences by type of shift (Chart A). For example, fewer women worked irregular shifts (25% vs. 35% for men), but they were more likely to work rotating shifts (41% vs. 34%) or evening shifts (14% vs. 10%).

Full-time shift workers were less likely to be married than their regular day counterparts. While about 7 in 10 day workers were married (with or without children), only about 6 in 10 shift workers were married (Table 4). Shift workers were more likely to be single—3 in 10 shift workers were single compared with 2 in 10 of those working a regular day schedule. This may be a result of shift workers being

slightly younger than day workers. For example, the average age of a full-time shift worker was about 38, compared with 41 for full-time day workers.

Presence of children may lead individuals to work different shift patterns. However, the proportion of married and common-law couples with children under 15 was the same for shift workers and day workers. The only significant difference was for regular evening workers. Only about 22% of families with a parent working evening shifts had children compared with about 30% of day workers.

Reasons for working shifts

The reasons for working a certain shift can vary. The General Social Survey did not ask the question, but the American Current Population Survey did. The most common reason, cited by 55% of full-time shift workers, was the nature of the job. However, for some, shift work was preferred because of family or child care (8%), school (3%), better pay (7%), or personal preference (11%). For another 8%, it was the only type of job they could get (McMenamin 2007).

Satisfaction with work-life balance varies somewhat with shifts

Work-life balance is a self-defined, self-determined state reached by a person able to effectively manage multiple responsibilities at work, at home, and in the community. It supports physical, emotional and family health and does so without grief, stress or negative impact (HRSDC 2005).

In general, work-life balance can be difficult to achieve for full-time workers irrespective of work schedules, especially for those with

Chart A Among full-time shift workers, women were more likely than men to work rotating or evening shifts

Women

Other 12%
Evening 14%
Night 8%
Irregular 25%
Rotating 41%

Men

Other 13%
Evening 10%
Night 8%
Irregular 35%
Rotating 34%
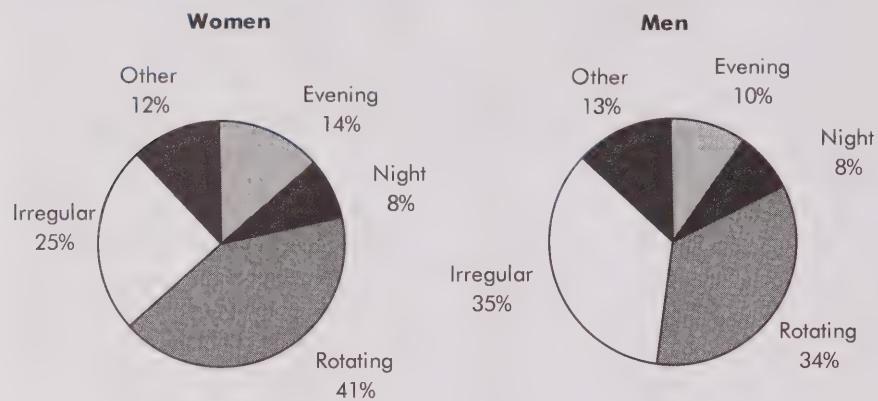
Source: Statistics Canada, General Social Survey, 2005.

children. However, when work schedules are regular, or when workers have some control over their shifts, it is much easier to reduce the conflicts relating to family and work (Halpern 2005). Not surprisingly then, satisfaction with work-life balance varies somewhat by type of shift. Indeed, day workers were the most likely to be satisfied with their work-life balance, followed by regular evening workers—their schedules are regular and they can plan activi-

ties around work. Perhaps surprisingly, since their schedules change throughout a month, almost 73% of rotating shift workers were satisfied with their work-life balance. The least satisfied were those with split or irregular shifts (about 65% were satisfied), on call or casual (62%), or with other shifts (63%)—those workers with the least control of their work schedules (Table 5).

For families with children where both spouses work full time finding balance may be a challenge, which could be exacerbated by shift work. The GSS shows that about 75% of full-time day workers whose spouse also worked full time were satisfied with their work-life balance. When their spouse worked part time or was not in the labour force, about 77% were satisfied. Conversely, full-time shift workers were more likely to be satisfied with their work-life balance when their spouse worked full time (71%) than when their spouse worked part time or was not in the

Table 4 Family status of shift workers aged 19 to 64

Family type	Regular day	Shift							
		Total	Evening	Night	Rotating	Split	On call or casual	Irregular	Other
					%				
Married or common-law, no children	41.7	34.3*	36.1	19.3*	33.3*	38.5	41.6	36.4*	41.1
Married, with children under 15	29.6	27.5	22.1*	27.0	26.2	21.1ᴱ	32.1ᴱ	31.0	29.8
Separated, widowed, divorced, no children	6.0	7.1	6.3ᴱ	12.0ᴱ*	5.8	10.5	F	7.2	7.1ᴱ
Separated, widowed, divorced, children under 15	2.3	1.7*	F	F	1.5ᴱ*	F	F	1.8ᴱ	F
Single, no children	19.2	28.0*	32.3*	38.0*	31.6	22.4ᴱ	17.7ᴱ	23.0*	18.6ᴱ
Single, children under 15	1.1	1.5	F	F	1.8ᴱ	F	F	F	F

* significantly different from regular day schedule in the same category
Source: Statistics Canada, General Social Survey, 2005.

Table 5 Well-being of full-time shift workers aged 19 to 64

	Regular day	Shift							
		Total	Evening	Night	Rotating	Split	On call or casual	Irregular	Other
Work-life balance					%				
Satisfied	75.8	69.1*	73.0	70.0	72.5	65.0	61.7*	65.9*	62.7*
Dissatisfied	22.6	28.5*	23.1	27.2	25.4	32.6ᴱ	37.7ᴱ*	32.4*	32.8*
Role overload indicators									
Cut back on sleep	53.6	61.1*	70.0*	60.4	62.9*	61.0	60.1	58.1*	56.1
Not accomplishing all in a day	47.2	50.0	47.9	44.2	49.4	53.5	49.9	52.2	52.7
Not enough time with family and friends	50.8	55.7*	50.9	53.0	54.2	56.4	65.8*	58.1*	58.5
Often stressed when trying to accomplish more than can handle	40.7	43.4	45.3	35.8	41.4	49.8	47.3	46.7*	44.5
No time for fun	41.1	43.3	42.0	39.1	42.9	60.1*	52.4	41.5	49.6
Role overload									
Yes (four or more indicators)	27.2	30.9*	26.1	33.1	31.1*	35.5	38.6ᴱ	30.4	31.8
Other well-being indicators									
Workaholic	30.3	36.1*	36.9	27.1	33.2	42.2	41.4	43.1*	26.7
High life stress	26.6	26.8	21.0	25.2	24.1	35.6	22.0ᴱ	31.3*	30.1
Flexible work arrangements	40.3	35.0*	19.5*	11.9ᴱ*	21.0*	32.8	53.1*	59.9*	43.6

* significantly different from regular day schedule
Source: Statistics Canada, General Social Survey, 2005.

labour force. Indeed, satisfaction with work-life balance decreased to 57% for full-time shift workers when their spouse worked part time and was 68% when their spouse was not in the labour force (Chart B).

While the proportion of full-time workers unhappy with their work-life balance varied, the main reasons for dissatisfaction were similar. For example, not enough time for family and too much time spent on the job were the top reasons for all full-time workers regardless of their schedule. Other employment-related reasons and not enough time for other activities were also cited.

Role overload—too much to do and not enough time to do it—provides another measure of well-being. For example, often feeling that not enough is accomplished in the day, worrying about not spending enough time with family, constantly feeling under stress, trying to accomplish more than can be handled and cutting back on sleep are all indicators of role overload.

Indeed, cutting back on sleep in order to gain time is one way to try to find time to accomplish more in a day, but if done regularly it can have negative health

Chart B Work-life balance more elusive for shift-worker couples

Satisified with work-life balance (%)
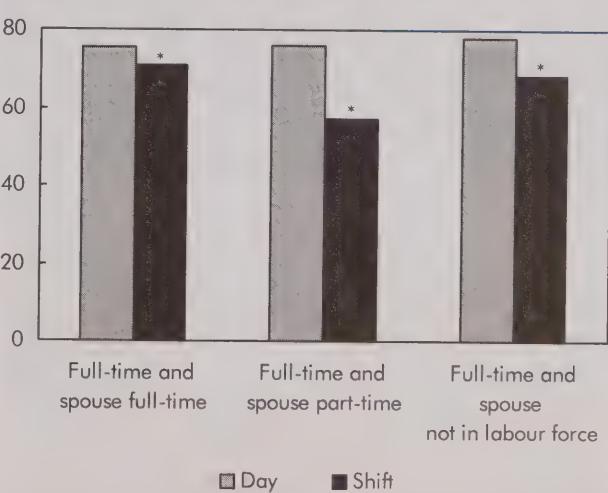
* significantly different from regular day schedule
Source: Statistics Canada, General Social Survey, 2005.

Shifts over time

Between 1992 and 1998 the proportion of full-time workers who worked something other than a regular daytime schedule increased from 22% to 28%; it then slipped back to 25% in 2005. Over this same 14-year period, women's share among full-time workers increased from 39% to 42%, and their share of full-time shift work increased from 33% to 37%.

Rotating shifts and irregular shifts remained the most common. For example in 1992, one in two shift workers worked a rotating schedule; by 2005 two-thirds of full-time shift workers worked either a rotating or an irregular schedule (irregular shifts were not identified in 1992).

While it is not possible to look at the type of work schedule worked by spouses, it is possible to examine if spouses of full-time workers were in the labour force and whether they worked full or part time. If the spousal work patterns are different for regular day workers and shift workers, this may suggest that families, where at least one parent works something other than a daytime schedule, find ways to juggle their work schedules.

In 1998, about 5.5 million day workers had a spouse in the household. Most full-time day workers' spouses worked full time (60%). In the case of shift workers, just over 2 million full-time shift workers had a spouse—and about 58% of spouses worked full time, 16% worked part time and another 23% were not in the labour force. By 2005, full-time participation in the labour force grew for spouses of shift workers—about 1.9 million shift workers had a spouse in the household—and 64% of these spouses worked full time, 13% part time and 23% were not in the labour force.

The issue of balancing home and work is not new as workers face the struggle to juggle. Indeed, about 28% of all full-time workers in 1998 were dissatisfied with their work-life balance (not asked in 1992). Not surprisingly, shift workers had slightly higher levels of dissatisfaction than day workers (33% vs. 25%). In 2005 dissatisfaction with work-life balance had decreased slightly to 29% for shift workers and about 23% for full-time day workers, illustrating that although work-life balance has been an issue for some time, it does not appear to be increasing.

Full-time workers aged 19 to 64 by shift

	1992	1998	2005
		'000	
All workers	10,387	11,102	13,139
Men	6,323	6,695	7,644
Women	4,064	4,407	5,495
		%	
Regular day	77.9	72.3	74.4
Men	75.6	69.6	72.4
Women	81.3	76.5	77.2
Shift workers	22.2	27.6	25.5
Men	24.4	30.4	27.5
Women	18.7	23.5	22.7
Evening	14.7	10.5	11.5
Men	13.4	10.1	10.3
Women	17.2	11.2	13.6
Night	8.3	7.3	8.1
Men	8.4	7.4	8.1
Women	8.1ᴱ	7.1ᴱ	8.0
Rotating	51.7	35.1	36.3
Men	52.7	32.1	33.7
Women	49.7	41.2	40.8
Split	6.6	3.2	3.9
Men	6.4	3.1	3.6ᴱ
Women	6.8ᴱ	3.4ᴱ	4.4
On call/casual	..	3.6	3.0
Men	..	3.2	3.3
Women	..	4.2ᴱ	2.6ᴱ
Irregular	..	39.9	31.4
Men	..	43.7	35.1
Women	..	32.3	25.2
Other	18.8	F	5.7
Men	19.0	F	5.9
Women	18.3	F	5.5

Source: Statistics Canada, General Social Survey.

implications (Rosa and Colligan 1997). While more than 50% of all full-time workers cut back on sleep when they needed more time, the likelihood differed by work schedule. For example, just over half of all day workers cut back on sleep compared with 70% of evening shift workers and 63% of rotating shift workers. This may be particularly problematic for shift workers since they may already be having difficulty with sleep time.

Several other role overload indicators were significantly different for shift workers. Shift workers were more likely than their day worker counterparts to worry about not spending enough time with family or friends (56% vs. 51%). Those working irregular schedules seemed the most affected by role overload. They were significantly more likely to cut back on sleep, worry about not spending enough time with family and friends, and feel constantly stressed trying to accom-

plish more than they could handle. While experiencing one or two of the role overload components indicates some level of overload, four or more indicates more serious overload. About 27% of day workers and 31% of shift workers cited four or more indicators.

Work-life balance and role overload measures differed for men and women. While women in general had a higher incidence of work-life imbalance (27% vs. 19%) and role overload (32% vs. 23%), they showed no significant differences by shift type. Conversely, for men, shift workers were more likely to be dissatisfied with their work-life balance (29%) than those working a regular day schedule (19%). Men also differed between day and shift work in the incidence of role overload. While 28% of men working shifts had high role overload, only 23% of their day worker counterparts experienced high levels (Chart C).

General life stress is another measure of role overload, particularly if it results from feeling that there is not enough time in the day to do everything. In general terms, no difference in life stress was seen between regular day workers and shift workers—around 27% of both felt most days were quite a bit to extremely stressful. As to what caused this stress, about half cited lack of time as the trigger.

Flexibility of schedule

Previous research has shown that flexible work schedules lead to greater work-life balance and can offset work stress (Levin-Epstein 2006). The GSS allows for partial examination of work schedule flexibility, asking workers if they have flexible start and end times. While about 4 in 10 day workers had flexible times, some shifts were less likely to offer this flexibility. For example, only about 20% of evening shift workers and less than 12% of night shift workers had flexible work arrangements, but over 50% of those who worked irregular, on-call or casual shifts had flexible schedules.

Shift work and time spent with family

Previous research has found trade-offs between non-standard schedules and time spent with a spouse and children. For example, working at night is associated with spending more time with children—suggesting that night schedules are a way for parents to juggle child care (Golla and Vernon 2006). In 2005, night shift workers spent 4.4 hours per day with their children—about 30 minutes per day more than day work-

Part-time workers

In general, women were more likely than men to work part time. This holds true regardless of work schedule. For example, about 78% of part-time day workers were women and 69% of part-time shift workers were women.

Working part time may allow workers to achieve work-life balance and be less likely to suffer from role overload, as they may feel they have more time to devote to non-work activities. While full-time shift workers were less likely to be satisfied with their work-life balance than full-time day workers, this was not the case for part-time workers—85% were satisfied with their work-life balance.

Perhaps because of the hours during which they work, part-time shift workers were significantly more likely to cut back on their sleep than day workers. However, working part time seems to smooth out other differences between day and shift workers, as no other significant differences in role overload or other well-being indicators were seen between part-time day and shift workers.

Part-time workers aged 19 to 64

	Regular day	Shift
Total	773,000	721,000
Sex	%	
Men	22.4	30.7*
Women	77.6	69.3*
Family type		
Married or common-law, no children	37.3	31.9
Married, children under 15	31.2	32.4
Separated, widowed, divorced, no children	8.9	5.0ᴱ
Separated, widowed, divorced, children under 15	F	F
Single, no children	17.6	27.7
Single, children under 15	F	F
Work-life balance		
Satisfied	88.0	84.5
Dissatisfied	10.4	13.7
Role overload indicators		
Cut back on sleep	41.2	54.0*
Not accomplishing all in a day	47.7	49.0
Not enough time with family and friends	41.7	41.7
Often stressed when trying to accomplish more than can handle	32.7	36.5
No time for fun	28.8	31.5
Role overload		
Yes (four or more indicators)	18.9	22.8
Other well-being indicators		
Workaholic	15.7	16.3
High life stress	17.4	15.8
Flexible work arrangements	46.9	51.8

* significant difference from part-time day workers
Source: Statistics Canada, General Social Survey, 2005.

Chart C Regardless of schedule, women more likely to have work-life imbalance or role overload

%
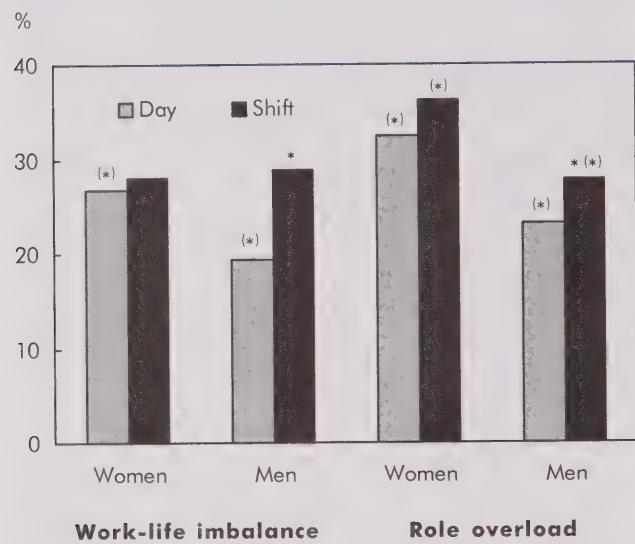
* significantly different from regular day schedule
(*) significantly different from opposite sex
Source: Statistics Canada, General Social Survey, 2005.

vious studies, some shift workers spent less time sleeping or had more difficulty sleeping than their day counterparts (Williams 2001, Rosa and Colligan 1997, Åkerstedt 2003). For example, daytime workers averaged just over 8 hours of sleep, while regular night shift workers had about 45 minutes less.

Multivariate analysis

Logistic regression models were used to examine the relationship between satisfaction with work-life balance and role overload and several job characteristics, including shift work, and various demographic variables. Separate models were developed for women and men since factors contributing to their well-being have been shown to be different (MacDonald, Phipps and Lethbridge 2005).

Working shift was associated with a lower likelihood of avoiding role overload. That is, shift workers, both men and women, were about 15% less likely than day workers to have no role overload. Shifts were also a factor in the satisfaction with work-life balance model for men. Male shift workers were about 25% less likely than day workers to be satisfied with their work-life balance. However, shift work was not a significant predictor in the work-life balance model for women.

ers—and they spent 3.3 hours with their spouse—just over 1 hour less than day workers (Table 6). While working in the evening has been associated with less time spent with spouses and children (Golla and Vernon 2006), the GSS found only partial support for this. For example, evening shift workers spent an average of 4.2 hours per day with their children—about 18 minutes more than day workers—but they spent less time with their spouse than day workers (about 1 hour less).

Average time spent on unpaid work was relatively constant at about 96 minutes per day, with a few exceptions—night workers did slightly less at about 83 minutes and those working irregular shifts, about 92 minutes. Finally, as in pre-

Table 6 Time spent on activities by full-time shift workers aged 19 to 64

	Paid work	Unpaid work	Sleep	Time with children[1]	Time with spouse[2]	Time with household members[3]
			hours			
Day	6.8	1.6	8.1	3.9	4.4	4.6
Evening	6.4	1.8	8.1	4.2	3.4	3.8
Night	7.1	1.4	7.4	4.4	3.3	3.3
Rotating	6.8	1.7	7.9	3.9	4.1	3.9
Split	6.5	1.6	8.0	3.5	4.1	4.1
On call or casual	7.0	1.9	7.7	3.3	3.2	3.2
Irregular	7.2	1.5	7.9	3.1	4.2	4.5
Other	7.4	1.9	7.5	3.7	5.0	4.8

1. For those with children under 15.
2. For those with a spouse or partner.
3. For those not in a single-person household (includes time spent with children 15 and over living at home).
Source: Statistics Canada, General Social Survey, 2005.

Other factors were associated with satisfaction with work-life balance and role overload for both women and men. Indeed, those satisfied with their job had significantly higher odds of feeling satisfied with their work-life balance or not being overloaded (Table 7). For example, women very satisfied with their job had 5.7 times the odds of being satisfied with their work-life balance and 2.4 times the odds of not suffering from role overload. This supports research showing that a positive work environment and high levels of job satisfaction can help individuals feel less stressed and help them attain better balance (HRSDC 2008). Additionally, individuals with high levels of life stress had significantly lower odds of being satisfied with their work-life balance or being able to achieve role balance. For example, women working full time and having high levels of life stress had a 68% lower chance of being satisfied with their work-life balance (58% for men), and both women and men had a 76% lower likelihood of avoiding role overload.

Time spent on the job also affects work-life balance. For example, working 46 hours or more per week was associated with lower odds of being satisfied with the balance between work and home for both sexes. Long work hours were also associated with role overload. Indeed, for both men and women working long hours was associated with a lower likelihood of avoiding role overload. For example, women working 56 or more hours per week had a 72% lower likelihood of being satisfied with their work-life balance and a 56% lower likelihood of avoiding role overload (78% and 49% respectively for men). Additionally, those seeing themselves as workaholics also had lower odds of having struck a satisfactory work-life balance or avoiding role overload. This may be because workaholics perceive and allocate their time differently than other workers while at the same time feeling they are under pressure to accomplish more than is possible in a day (Keown 2007).

Flexibility of schedule was also important in avoiding role overload for both men and women. Those with flexible work schedules were 1.3 times more likely to avoid role overload. For women, having a flexible schedule was also associated with finding satisfaction with work-life balance. This may be because a flexible work schedule allows for appointments, children's school events, unforeseen child or elder care issues, or other events that may arise.

Satisfaction with work-life balance and being able to avoid role overload are also related to demographic characteristics. Even after accounting for other confounding factors, age seems to play a role for both measures. For example, individuals between 35 and 54 had lower odds than those between 55 and 64 of being satisfied with their work-life balance or having avoided role overload. This may be because younger individuals are in their prime working years and more concerned with developing careers, while older individuals are more established both at home (older children) and at work.

The well-being models were similar for men and women, except for two striking differences. For women, family type was a significant predictor of both work-life balance and role overload; for men, this was not the case. For women, having a spouse and children or being a lone parent was associated with lower odds of being satisfied with work-life balance or avoiding role overload; for men, family type was significant only in the role overload model. These differences may reflect women's continuing role as primary caregivers of children and managers of households.

The other differences between men and women were in the industry and occupation variables. While industry had no effect for women on either measure, this was not the case for men. For men, manufacturing, trade, and transportation and warehousing were associated with a lower likelihood of being satisfied with their work-life balance; manufacturing, and education and health, were associated with being less likely to avoid role overload.

Some occupations—social sciences, sales and culture; and trades and those unique to primary industries or manufacturing—seemed to offer some protection to both men and women with respect to role overload compared with managerial, business, finance or scientific jobs.

For those with high incomes, the purchase of time, through restaurant meals, cleaning services or other services may be one way to reduce the time burden and thereby find balance or reduce overload. While income did not have a significant impact for women on the likelihood of being satisfied with work-life balance, lower incomes were associated with a lower likelihood of being able to avoid role overload for both men and women.

Summary

In 2005, over 3 million full-time workers worked something other than a regular daytime schedule, with two-thirds of them working a rotating or irregular shift. Just as women's share of full-time work has increased in the labour market in general, so too has their share of full-time shift work. In 2005, about 37% of full-time shift workers were women, up from about 33% in 1992.

Some occupations are more commonly associated with shift work. Almost half of workers in health-related occupations and two-thirds of those in protective services worked shifts. Not surprisingly, those in sales and service-related occupations were also more likely to work shifts.

Time-use patterns are slightly different among shift workers. Virtually all shift workers spent less time with their spouse than those who worked a regular day schedule. But certain types of shifts had little in common with daytime work in terms of time spent on activities. For example, night shift workers spent the least time on unpaid work or sleeping but spent more time with their children than other shift workers.

Work-life balance and role overload are measures of well-being. In 2005, shift workers were significantly more likely to be dissatisfied with their work-life balance than regular day workers. They were also more likely to suffer from role overload. Indeed, those working on call or other shifts had significantly higher levels of dissatisfaction with work-life balance than day workers (23%). Interestingly, all shift workers were more likely to cut back on sleep when they

Table 7 Multivariate models of work-life balance and role overload

	Satisfied with work-life balance		No role overload	
	Women	Men	Women	Men
Work schedule		odds ratio		
Regular day (ref*)	1.00	1.00	1.00	1.00
Shift work	n.s.	0.75*	0.82*	0.89*
Age				
19 to 34	n.s.	0.55*	0.68*	0.61*
35 to 54	0.72*	0.65*	0.76*	0.66*
55 to 64 (ref*)	1.00	1.00	1.00	1.00
Family type				
Couple, no children (ref*)	1.00	1.00	1.00	1.00
Couple, children	0.67*	n.s.	0.72*	0.80*
Lone parent	0.64*	n.s.	0.61*	0.56*
Other family	0.79*	n.s.	1.47*	1.28*
Education				
University degree or above (ref*)	1.00	1.00	1.00	1.00
College diploma or certificate	n.s.	n.s.	n.s.	0.85*
Some postsecondary	n.s.	n.s.	n.s.	n.s.
High school or less	1.72*	1.44*	n.s.	n.s.
Industry				
Primary and utility	n.s.	n.s.	n.s.	n.s.
Construction	n.s.	n.s.	n.s.	n.s.
Manufacturing	n.s.	0.74*	n.s.	0.81*
Trade	n.s.	0.69*	n.s.	n.s.
Transportation and warehousing	n.s.	0.66*	n.s.	n.s.
Financial, professional, business (ref*)	1.00	1.00	1.00	1.00
Education and health	n.s.	n.s.	n.s.	0.73*
Accommodation and food services	n.s.	n.s.	n.s.	n.s.
Public administration	n.s.	n.s.	n.s.	n.s.
Information, culture and recreation	n.s.	n.s.	n.s.	n.s.
Occupation				
Managers, business, finance, sciences (ref*)	1.00	1.00	1.00	1.00
Health	n.s.	n.s.	n.s.	n.s.
Social sciences, sales, culture	n.s.	n.s.	1.25*	1.30*
Trades, primary, processing, manufacturing	n.s.	1.40*	1.50*	1.47*
Usual Weekly hours				
Less than 39 (ref*)	1.00	1.00	1.00	1.00
39 to 45	0.83*	n.s.	0.76*	0.87*
46 to 55	0.52*	0.45*	0.66*	0.64*
56 or more	0.28*	0.22*	0.44*	0.51*
Flexible start and end time				
Yes	1.30*	n.s.	1.30*	1.30*
No (ref*)	1.00	1.00	1.00	1.00
Job satisfaction				
Unsatisfied with job (ref*)	1.00	1.00	1.00	1.00
Relatively satisfied	2.34*	2.20*	1.49*	1.38*
Very satisfied	5.65*	6.90*	2.37*	2.47*
Level of stress				
No stress (ref*)	1.00	1.00	1.00	1.00
Mid level of stress	0.73*	0.73*	0.57*	0.54*
High stress	0.32*	0.42*	0.24*	0.24*

Table 7 Multivariate models of work-life balance and role overload (concluded)

	Satisfied with work-life balance		No role overload	
	Women	Men	Women	Men
Workaholic	odds ratio			
Yes	0.57*	0.61*	0.38*	0.42*
No (ref*)	1.00	1.00	1.00	1.00
Elder care				
Yes	n.s.	n.s.	n.s.	n.s.
No (ref*)	1.00	1.00	1.00	1.00
Income				
Under $10,000	n.s.	n.s.	n.s.	n.s.
$10,000 to $29,999	n.s.	n.s.	0.63*	0.65*
$30,000 to $49,999	n.s.	1.40*	0.77*	0.73*
$50,000 to $79,999	n.s.	n.s.	n.s.	0.85*
$80,000 to $99,999	n.s.	n.s.	n.s.	n.s.
$100,000 and over (ref*)	1.00	1.00	1.00	1.00

* significantly different from the reference group (ref*) at 0.05 level or better
n.s. not significant
Source: Statistics Canada, General Social Survey, 2005.

needed more time and were more likely to worry about not spending enough time with family.

Logistic regression models compared the factors associated with work-life balance and role overload for men and women working full time. For men, working shift was associated with lower odds of being satisfied with their work-life balance, and shift work was a significant predictor of role overload for both women and men, indicating that because of the times they work, shift workers are more likely to feel they have too much to do and not enough time.

For women, family type was a significant factor in both satisfaction with work-life balance and avoidance of role overload. Conversely for men, industry was a factor, but family type had little bearing. However, certain factors were significant for both men and women. Indeed, regardless of work schedule or family type, being satisfied with one's job was associated with higher odds of being satisfied with work-life balance and being able to avoid role overload. Conversely, high general life stress, working 46 hours or more per week, or being a workaholic all lowered the odds of being satisfied with work-life balance and avoiding role overload. This, in short, suggests that satisfaction with work-life balance and role overload are related not only to workers' schedules but also to a complex interaction of hours worked, self-perception and general feelings of well-being.

Perspectives

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Remittances by recent immigrants

René Houle and Grant Schellenberg

Remittances—the money immigrants send to family members in their country of origin—have a long tradition. But with today's global networks of financial institutions and telecommunications technologies, the transmission of funds worldwide now takes place at a pace and volume unimaginable earlier.

Considerable work is underway both nationally and internationally to measure remittance flows. The World Bank estimates flows to developing countries at US$167 billion in 2005 (World Bank 2006). This is likely an underestimate as some remittances through formal channels, such as post offices or exchange bureaus, and remittances below a minimum threshold, are often not recorded in official estimates. Furthermore, remittances through informal channels, like family or friends, generally go unrecorded. Such unrecorded remittances could add 50% or more to the total.

Remittances represent an important revenue source for developing countries. In absolute terms, India (US$21.7 billion), China (US$21.4 billion), and Mexico (US$18.1 billion) top the list (World Bank 2006). In proportional terms, the importance of remittances to many smaller countries is evident. For example, remittances account for about 20% to 30% of GDP in Tonga, Moldova, Lesotho, Haiti, Bosnia and Herzegovina, and Jordan, and for about 10% to 19% in several others, such as Jamaica, El Salvador, the Philippines, the Dominican Republic, Lebanon and Nepal.

The importance of remittances can also be related to national industries. For example, remittances to Mexico "…are more than the country's total tourism revenues, more than two-thirds of the value of petroleum exports, and about 180% of the country's agricultural exports." (Inter-American Development Bank 2004). More broadly, in 28 countries, remittances are "…larger than the earnings from the most important commodity export." (World Bank 2006) Remittances often also exceed overseas development aid and foreign direct investment.

Recorded estimates of remittance flows to developing countries show a marked increase in recent years, rising by 73% between 2001 and 2005. This trend has been evident across a wide range of nations (World Bank 2006). Many factors are likely at play, including improvements in data collection, a shift from informal to formal networks and developments within the remittance industry (World Bank 2006; Orozco 2006).

While a great deal of Canadian research continues to focus on the labour market and income characteristics of recent immigrants, little attention has been paid to their expenditures, of which remittances are one component.[1] Their preferences or obligations to send money to family members abroad may have implications for other aspects of settlement, such as housing or employment decisions. And while high rates of low income underscore the financial constraints often faced by new Canadians, such figures do not take into account any income used to support family members abroad.

From a macroeconomic perspective, household data on remittances contribute to understanding international financial flows and play a role in the development of concepts and measures for systems of national accounts and balance of payments. Internationally, agencies such as the International Monetary Fund, World Bank, and Inter-American Development Bank (IADB) are interested in the institutional characteristics of bilateral remittance corridors. Indeed, "…efforts are underway to induce users [remittance senders] to shift from informal to formal systems in order to increase the transparency of remittance flows and enhance their contribution to development in the

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Table 1   Remitters and their remittances

	6 to 24 months after arrival		25 to 48 months after arrival	
	Remitters	Average	Remitters	Average
	%	$	%	$
Total	**23**	**2,500**	**29**	**2,900**
Region of birth				
Southeast Asia	52	2,000	56	2,400
Caribbean, Guyana	47	1,400	54	1,600
Sub-Saharan Africa	37	2,400	42	2,500
Eastern Europe	32	1,800	41	2,100
South Asia	23	3,600	28	3,700
Central, South America	23	2,000	25	2,000
East Asia	13	2,900	20	3,900
West Asia, Middle East, North Africa	13	2,000	19	2,500
North America, West Europe, Oceania	11	3,200	11	3,600
GDP/capita, country of birth				
Less than $2,000	31	1,900	35	2,200
$2,000 to $3,999	31	2,700	37	3,000
$4,000 to $5,999	20	2,500	25	3,300
$6,000 to $7,999	19	1,600	31	2,200
$8,000 to $14,999	26	2,400	28	1,900
$15,000 and over	8	3,100	11	3,900

Note: Averages are for those who remitted and have not been adjusted for inflation.
Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

recipient countries." (Hernández-Coss 2006) The Multilateral Investment Fund of the IADB identifies better documentation of the importance of remittances, reduced transaction costs and improved leveraging of the development impact of remittances as key objectives (Orozco 2002). Information on the entire remittance process, from senders to recipients, is needed to build a complete picture of this complex phenomenon.

Despite the ongoing interest, research on the characteristics of remittance senders in Canada remains quite limited, largely because of the absence of data. More broadly, studies are often focused on immigrants from only one or two source countries. This study uses the Longitudinal Survey of Immigrants to Canada (LSIC) to document the prevalence of remitting and the amounts remitted by immigrants from a wide range of countries (see *Data source and methodology*). The incidence of remitting by the 2000/2001 landing cohort ranged from less than 10% to about 60%; the average amounts ranged from about $500 to almost $3,000 per year. Financial and family characteristics were consistently significant among immigrants from all regions, but other factors, such as sex and education, were significant for only some.

Descriptive results

A significant minority of immigrants from the 2000/2001 landing cohort remitted funds to family or friends abroad during their first four years in Canada. In the 6 to 24 months after landing, 23% of immigrants remitted and 25 to 48 months after landing 29% did so (Table 1). Among those who remitted, the average amount was $2,500 in the first reference period and $2,900 in the second.[4] Assuming the total to be evenly distributed over the reference period, annual remittances during the third and fourth years in Canada were $1,450, which is comparable to estimates that Haitian and Jamaican immigrants send approximately $1,000 to $1,400 home per year (Simmons et al. 2005).

The extent to which remittance behaviour varies by region of birth is evident. Over half of immigrants from Southeast Asia and the Caribbean and Guyana sent remittances home 25 to 48 months after landing, compared with about 40% of those from sub-Saharan Africa and Eastern Europe. About one-quarter of the respondents from South Asia and Central and South America sent remittances during this period, while about one-fifth of those from East Asia or West Asia, the Middle East and North Africa did so. The average amounts sent also differed. Immigrants from East Asia sent $3,900, while immigrants from the Caribbean and Guyana sent $1,600.

The incidence of remitting was highest among those from countries with lower GDP per capita. Over the 25 to 48 months after landing, around 36% of immigrants from countries with GDP per capita under $4,000 remitted, compared with only 11% from countries with GDP per capita of $15,000 or more. One interpretation is that because their families are in greater need of financial support, immigrants from poorer countries are more likely to remit.

That being said, the relationship between GDP per capita and the incidence of remitting is fairly flat between these extremes, ranging from about 25% to 30%. Conditional on remitting, a consistent relationship between GDP per capita and average amounts was not evident.

By country of birth, variability is particularly striking (Chart A). Some 60% of immigrants from the Philippines and Haiti remitted two to four years after landing, while about 40% to 50% of immigrants from Jamaica, Nigeria, Romania, Guyana and Ukraine did so.[5] Quite clearly, remittances are sent by many new immigrants from a diverse set of world regions. France, the United Kingdom and South Korea—all industrialized—are at the bottom of the distribution.

As for the average amounts sent, remitters from 11 of 24 countries sent between $1,700 and $2,200, and remitters from another 7 countries sent between $2,700 and $3,700 (Chart B). While less than 20% of immigrants from the United States sent money home, the average amount was quite high—just under $6,000. (However, the confidence intervals around many of the estimates are quite large.)

In terms of admission categories, about 30% of immigrants in all three categories remitted 25 to 48 months after landing (Table 2). Among those who did remit, economic immigrants sent somewhat larger amounts than refugees ($3,000 versus $1,900). How-

ever, measures of central tendencies, like averages, demonstrate little about the range of values. Just over one-quarter of immigrants who remitted 25 to 48 months after landing sent less than $500. This was the case for 21% of economic immigrants compared with 45% of refugees. About one-half of immigrants in all categories sent between $500 and $2,500. And at the high end of the distribution, 12% of the economic immigrants who remitted sent $5,000 or more compared with 5% of refugees.

An important issue is the extent to which remittances impose financial hardships on newly arrived immigrants. Several studies have documented the relatively high and rising rates of low income among recent immigrants (Heisz and McLeod 2004; Picot et al. 2007). While measures of low income take the number of family members residing together into account, they do not take the sharing of income with members residing elsewhere into account. This applies to all families regardless of immigration status. However, given the relatively high rates of low income among recent immigrants and with almost one-third of them

Table 2 Remittances 25 to 48 months after landing

| | Total | Immigrant category | | |
		Eco-nomic	Family-class	Refugee
Remitters (%)	29	29	29	31
Average amount ($)	2,900	3,000	2,700	1,900
			%	
Remitters sending	**100**	**100**	**100**	**100**
Less than $500	26	21	33	45
$500 to $999	21	22	19	17
$1,000 to $2,499	24	26	22	19
$2,500 to $4,999	18	19	16	14
$5,000 or more	11	12	10	5

Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

Data source and methodology

The **Longitudinal Survey of Immigrants to Canada** (LSIC), conducted jointly by Statistics Canada and Citizenship and Immigration Canada (CIC), included all immigrants who arrived between October 1, 2000 and September 30, 2001; were age 15 or older on landing; and had applied through the Canadian Mission abroad. The sampling frame was an administrative database maintained by the CIC. The LSIC used two-stage stratified sampling. The first stage selected immigrating units (IUs) using probability proportional to size and the second randomly selected one member within each IU. Only the selected member was followed throughout the survey.

Respondents were first interviewed about six months after arrival and then again after two and four years. During the first interview they were asked if, since arriving, they had sent money outside Canada to relatives or friends—they were not asked the amount. During the second and third interviews, respondents were also asked the amounts.

The multivariate analysis includes a logistic regression on the likelihood of remitting and an ordinary least squares regression on the natural logarithm of the amount remitted. Coefficients from the logistic regressions have been converted into predicted probabilities for ease of interpretation.[2] Coefficients from the natural logarithm of the amount remitted approximate percentage differences and are discussed in these terms for ease of presentation. All models are calculated using bootstrap weights to correct variance estimates for survey design (a technique called design-based variance estimation).[3]

Chart A The proportion of immigrants making remittances varied considerably by country of origin
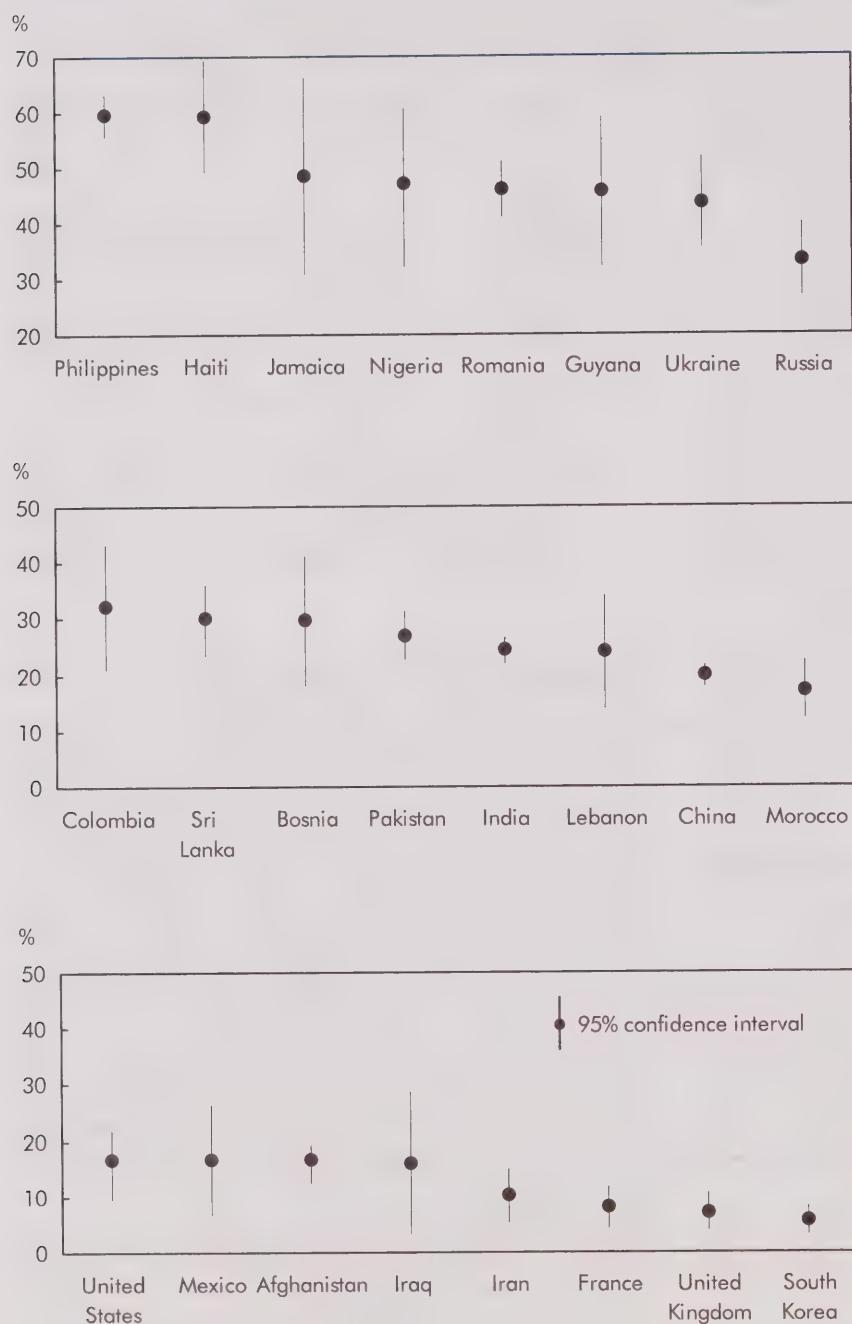
%

Philippines Haiti Jamaica Nigeria Romania Guyana Ukraine Russia

%

Colombia Sri Lanka Bosnia Pakistan India Lebanon China Morocco

%

95% confidence interval

United States Mexico Afghanistan Iraq Iran France United Kingdom South Korea

Note: Average of the average amounts remitted (conditional on remitting) at two years and four years after landing.
Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

sending money abroad, their financial resources may be stretched further than income figures alone would suggest.

Caution is warranted when addressing this issue. Because remittance behaviour is measured using individuals rather than families or households, estimates of amounts sent abroad are likely conservative. Furthermore, remittances as a share of income can be computed using total personal income or total economic family income as the denominator. Personal income yields a higher percentage, but does not take any sharing of financial resources into account. Family income yields a lower percentage, but mixes units of analysis (personal remittances and family income). Results from both approaches represent conservative estimates of the lower and upper bounds of remittances as a share of income (Table 3). Remittances accounted for 7.5% of the personal income of remitters and 3.4% of family income, on an average annualized basis, during remitters' second year in Canada. Two years later, remittances accounted for 5.9% and 2.9%.[6]

When all immigrants are considered, regardless of whether they remitted, remittances accounted for 3.7% and 3.4% of aggregate personal income, and 1.6% and 1.3% of aggregate family income, two and four years after arrival. From this perspective, remittances account for a fairly small share of the income of newly arrived immigrants. Nonetheless, remittances may still represent a considerable expenditure for some families—take refugees for example. The average family income of refugees who remitted during their fourth year in Canada was $36,100. By comparison, the 2004 before-tax

Chart B Average remittances were less than $4,000 for three-quarters of 24 countries of origin
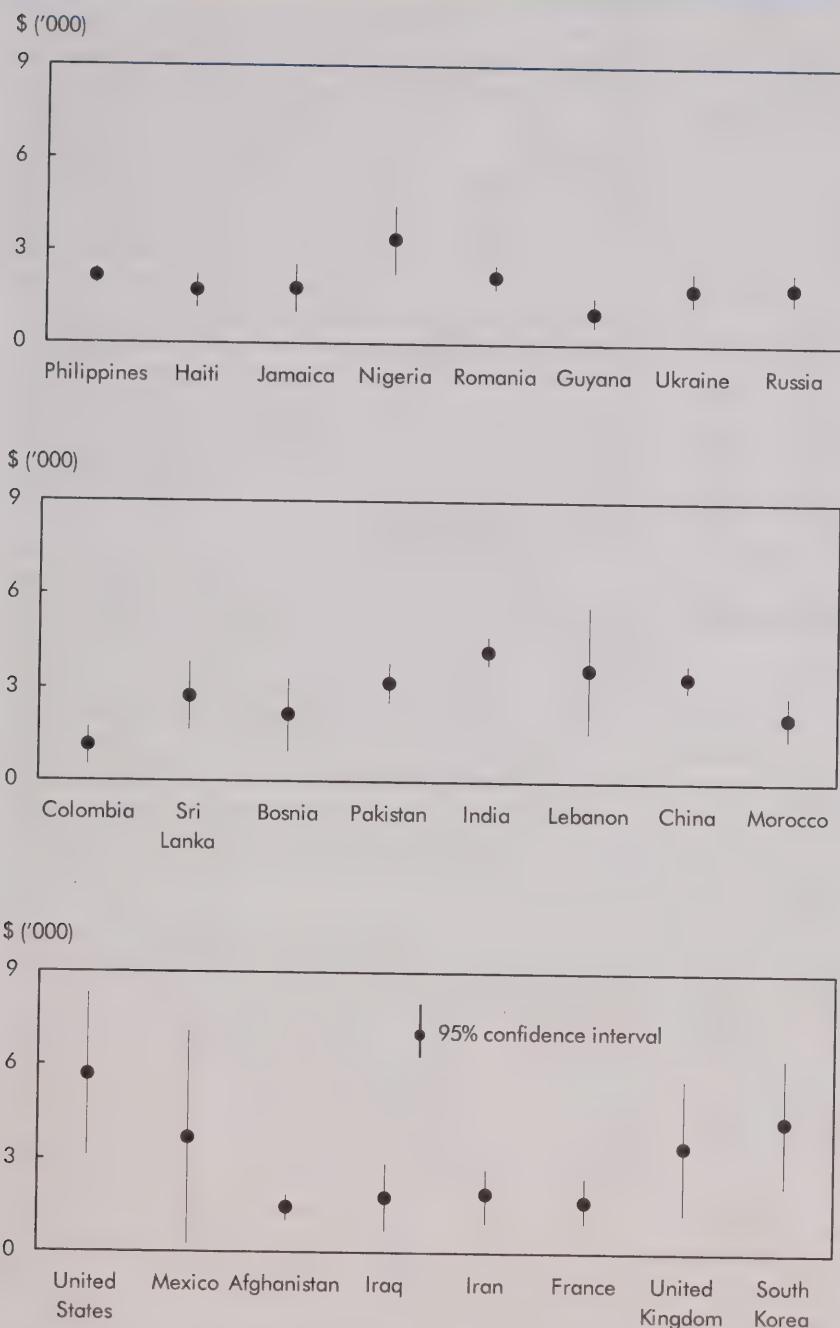
$ ('000)

Philippines Haiti Jamaica Nigeria Romania Guyana Ukraine Russia

$ ('000)

Colombia Sri Lanka Bosnia Pakistan India Lebanon China Morocco

$ ('000)

95% confidence interval

United States Mexico Afghanistan Iraq Iran France United Kingdom South Korea

Note: Average of the average amounts remitted (conditional on remitting) at two years and four years after landing.

Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

low-income cut-off (LICO) was just over $31,000 for a three-person family and just under $38,000 for a four-person family residing in a large urban centre. (The LICO is an income threshold below which a family will likely devote a larger share of its income than the average family on the basic necessities of food, shelter and clothing.) For refugees who remitted, the average of almost $1,000 came from a fairly modest family income.

Multivariate results, pooled model

Descriptive statistics demonstrate the magnitude of differences in remittance behaviour, which partly reflect the characteristics and experiences of individuals from different countries. The significance of the various factors was examined via logistic regression and based on ordinary least squares regression.

Demographic characteristics

A modest correlation could be seen between sex and remittance behaviour, with predicted probabilities of remitting (after taking other characteristics into account) of 26% for men and 23% for women (Table 4). Among those remitting, women sent approximately 12% less than men. Age is also important—the predicted probability was highest among immigrants aged 25 to 44 (about 30%) and lower among those in younger and older age groups (less than 20%). Individuals 25 to 34 who remitted sent larger amounts than those under 25 or 55 and older.

Financial capacity

Consistent with the literature, strong correlations were found between remittance behaviour and financial capacity. For example, the

Table 3 Annual incomes of remitters

		Immigrant category		
	Total	Eco-nomic	Family-class	Refugee
2nd year after arrival				
Personal income ($)	22,200	27,200	14,100	12,500
Remittance as share of income (%)	7.5	6.7	10.4	8.1
Family income ($)	48,700	51,000	47,400	28,300
Remittance as share of income (%)	3.4	3.5	3.1	3.6
4th year after arrival				
Personal income ($)	28,200	33,600	17,500	16,400
Remittance as share of income (%)	5.9	5.4	8.4	6.1
Family income ($)	57,200	61,100	52,600	36,100
Remittance as share of income (%)	2.9	3.0	2.8	2.8

Note: Based on those making remittances.
Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

predicted probability of remitting rose monotonically with family income, from 10% among immigrants with family incomes under $10,000 to 36% among those with incomes of $70,000 or more. The amounts sent also increased monotonically. The amount sent by remitters in families with incomes of $70,000 or more was approximately 45% higher than the amount for those with incomes of $25,000 to $44,999.

Considering savings abroad, immigrants who had $5,000 or more were significantly less likely to remit (about 20%) than those with no savings abroad (26%). One interpretation is that immigrants with savings abroad come from more affluent families, and hence were less likely to remit. Among remitters, the amounts were not correlated with savings.

Consistent with other studies, immigrants employed full time were significantly more likely to remit than those employed part time or not employed (predicted probabilities of 29%, 25% and 21% respectively). However, employment status was not correlated with the amount sent.

The probability of remitting was not significantly associated with immigrants' level of education upon arrival. However, the amounts sent by those with no

postsecondary education were 20% to 25% less than the amounts sent by those with a university degree.

Finally, place of residence was positively correlated with both incidence of remitting and amounts. The predicted probability of remitting ranged from 21% among immigrants in Montréal to 34% in Calgary and Edmonton. Through the 2000s, the labour markets in Calgary and Edmonton have been especially robust, fuelled by oil and gas and high world commodity prices. In 2004, for example, the unemployment rates in Edmonton and Calgary for men aged 25 to 44 (3.7% and 4.4% respectively) were about half the rate in Montréal (8.7%). The greater incidence of remitting among immigrants in these cities likely reflects favourable labour market circumstances and perhaps positive expectations about future earnings. Among immigrants who remitted, those in Calgary, Edmonton and Vancouver sent about 16% more than those in Toronto.

Obligations to family

Although LSIC information on family abroad is limited, the available evidence is consistent with the view that remittance behaviour is shaped by family characteristics. The likelihood of remitting and the amounts were negatively correlated with the number of minor children in the household. The predicted probability of remitting was 18% for households with three or more children, compared with 27% for those with no children. Furthermore, amounts sent by remitters with one or two children were 17% to 19% less, and with three or more children 36% less, than by those with no children.

The importance of family characteristics was also evident in intentions to sponsor family members to come to Canada. Immigrants already sponsoring or intending to sponsor a spouse or child were more likely to remit than those with no sponsorship activities or intentions (predicted probabilities of 36% and 23% respectively). Those sponsoring a child or parent sent approximately 23% more than those with no sponsorships. The same patterns were evident among immigrants sponsoring a parent or grandparent. Their predicted probability of remitting was 30% and they sent approximately 12% more. These findings are consistent with other studies reporting that immigrants remitting to support children and spouses tend to send more than those helping other family members (Stanwix and Connell 1995).

Table 4 Regression results on pooled sample

	Logistic regression coefficients on probability of remitting	Predicted probability of remitting[1]	Ordinary least squares coefficients on natural log of remittance
		%	
Sex			
Men (ref*)	...	26	...
Women	-0.170*	23	-0.117*
Age			
15 to 24	-0.718*	17	-0.200*
25 to 34 (ref*)	...	30	...
35 to 44	-0.093	28	-0.073
45 to 54	-0.607*	19	-0.017
55 or older	-0.879*	15	-0.277*
Family income			
Less than $10,000	-1.110*	10	-0.453*
$10,000 to $24,999	-0.605*	16	-0.316*
$25,000 to $44,999 (ref*)	...	26	...
$45,000 to $69,999	0.235*	31	0.220*
$70,000 or more	0.471*	36	0.445*
Savings abroad			
No saving abroad (ref*)	...	26	...
Less than $5,000	-0.109	24	0.014
$5,000 to $24,999	-0.477*	18	0.135
$25,000 or more	-0.318	20	0.111
Missing	-0.237	21	-0.030
Person most knowledgeable on income			
Respondent (ref*)	...	26	...
Other	-0.280*	21	-0.073
Employment status			
Employed full time (ref*)	...	29	...
Employed part time	-0.239*	25	-0.099
Not employed	-0.465*	21	-0.065
Education at landing			
Less than high school	0.131	27	-0.255*
High school	0.035	25	-0.201*
Completed postsecondary	-0.065	23	-0.078
University degree (ref*)	...	24	...
Place of residence			
Toronto (ref*)	...	23	...
Montreal	-0.143	21	0.099
Vancouver	0.167*	26	0.159*
Calgary, Edmonton	0.553*	34	0.158*
Other	0.204*	27	0.036
Children in household			
No children (ref*)	...	27	...
One	-0.153*	24	-0.169*
Two	-0.404*	20	-0.187*
Three or more	-0.512*	18	-0.361*
Sponsorship			
None (ref*)	...	23	...
Spouse or child	0.598*	36	0.231*
Parent or grandparent	0.322*	30	0.117*

Immigrant class

Although descriptive statistics indicated little difference in the incidence of remitting by immigration category, the picture changed somewhat with other characteristics taken into account. More specifically, the predicted probability of remitting was somewhat higher among family class immigrants (27%) than among economic immigrants (23%). Similarly, the predicted probability of remitting was 28% among refugees (although this estimate was just over the 0.1 level of confidence). The immigration category was not correlated with amounts sent.

Organizational involvement

Of the two organizational participation/involvement variables in the model, one was significant. Specifically, those belonging to a religious organization were more likely to remit than other immigrants (predicted probabilities of 28% and 24% respectively). Organizational involvement was not correlated with amounts remitted.

Region of birth

Dummy variables identifying immigrants from nine regions captured interregional differences in remittance behaviours net of other characteristics. Again, the differences were large. The predicted probability of remitting was highest among immigrants from Southeast Asia and the Caribbean and Guyana (52%), followed by Eastern Europe and sub-Saharan Africa (35% and 32%). The likelihood of remitting was lowest for those from West Asia, the Middle East and North Africa (16%), North America, Western Europe and Oceania (17%) and East Asia (18%). Among remitters, those from East Asia sent the largest amounts.

Table 4   Regression results on pooled sample (concluded)

	Logistic regression coefficients on probability of remitting	Predicted probability of remitting[1]	Ordinary least squares coefficients on natural log of remittance
		%	
Immigrant category			
Family class	0.174*	27	-0.033
Economic (ref*)	...	23	...
Refugee	0.249	28	-0.135
Member of religious organization			
No (ref*)	...	24	...
Yes	0.230	28	-0.046
Member of ethnic/immigrant organization			
No (ref*)	...	25	...
Yes	0.145	27	-0.002
Region of birth			
North America, Western Europe, Oceania	-0.067	17	-0.554*
Eastern Europe	0.860*	35	-0.629*
Caribbean, Guyana	1.586*	52	-0.789*
Central, South America	0.362*	24	-0.693*
Sub-Saharan Africa	0.760*	32	-0.487*
West Asia, Middle East, North Africa	-0.148	16	-0.461*
East Asia (ref*)	...	18	...
Southeast Asia	1.581*	52	-0.770*
South Asia	0.283	23	-0.139
GDP/capita, country of birth			
Less than $2,000	0.566*	38	-0.169
$2,000 to $3,999 (ref*)	...	26	...
$4,000 to $5,999	0.127	28	-0.215*
$6,000 to $7,999	0.143	29	-0.216*
$8,000 to $14,999	-0.466*	18	-0.283*
$15,000 or more	-0.957*	12	-0.133
Constant	-0.782*	...	8.089*

* statistically significant or significantly different from a reference group (ref) at 0.05 or better
1. Predicted probability of remitting with other co-variates set to their mean values.
Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

Finally, remittance behaviour was significantly associated with GDP per capita in the country of birth. The predicted probability of remitting was highest for immigrants from countries with GDP per capita below $2,000 (38%) and lowest for countries with GDP per capita of $8,000 to $14,999 (18%) or $15,000 or more (12%).

Multivariate results, regional comparisons

Given the considerable variation in the remittance behaviour of immigrants from different regions, one question that arises is whether the factors associated with remitting are universal or regional. To address this, separate regression models were estimated for immigrants from nine regions. Because three of these models were based on samples of less than 800, the likelihood of regression coefficients being statistically significant was reduced. Hence, these models used a simplified specification—some co-variates were excluded because they were correlated with region (e.g. immigrant category), while others, like number of children, were re-grouped into fewer categories.

Several characteristics were consistently correlated with remittance behaviour (Tables 5 and 6). This was most evident for financial capacity. The likelihood of remitting and the amount were both positively and significantly correlated with family income for seven of the nine regions.[7] Employment status was correlated with the likelihood of remitting for six regions, but the amount for only two. Finally, savings abroad were negatively correlated with the likelihood of remitting for five regions, but not correlated with the amount sent for any.

The correlations between presence of children and the likelihood of remitting and the amount were significant for four regions, and approached significance for another. The positive correlation between sponsorship of a family member and the likelihood of remitting was significant for five regions, but significant for the amount in only two cases.

The negative correlation between older ages and the likelihood of remitting was significant for six of the nine regions, but the correlation with the amount sent was significant in only one case.

Table 5   Logistic regression on the probability of remitting by region of birth

Region	A	B	C	D	E	F	G	H	I
Sex					β coefficient				
Men (ref*)	...	...	...	...	...	...	...	...	...
Women	-0.302	-0.127	0.015	-0.030	-0.058	-0.545*	0.101	-0.023	-0.445*
Age group									
15 to 24	-0.271	-0.200	-0.238	-0.293	-0.826*	-0.604*	-0.809*	-1.110*	-1.017*
25 to 34 (ref*)	...	...	...	...	...	...	...	...	...
35 to 44	0.399	-0.070	0.457	-0.303	-0.084	-0.195	-0.114	-0.146	-0.035
45 to 54	0.483	-0.405	0.273	-1.124	-1.140*	-0.721*	-0.766*	-0.525*	-0.958*
55 or older	0.441	-0.784*	-1.026	-0.666	-0.536	-2.454*	-0.591	-0.789*	-1.090*
Family income									
Less than $10,000	..	-0.557	-0.666	-0.568	-1.180*	-0.913*	-1.483*	-1.452*	-1.428*
$10,000 to $24,999	-0.530	-0.836*	-0.095	-0.775*	-0.447	-0.532*	-0.790*	-0.441*	-0.432*
$25,000 to $44,999 (ref*)	...	...	...	...	...	...	...	...	...
$45,000 to $69,999	-0.151	0.458*	-0.117	-0.067	-0.188	0.438*	0.454*	0.206	0.104
$70,000 or more	0.228	0.811*	0.348	0.284	-0.092	0.860*	0.823*	0.405*	0.352*
Savings abroad									
No saving abroad (ref*)	...	...	...	...	...	...	...	...	...
Less than $5,000	-0.109	-0.950	-0.338	-0.296	-0.311	0.319	-0.470	0.528*	-0.139
$5,000 to $24,999	-0.914*	-0.748	-0.544	-1.425	-1.383*	-1.319*	-0.252	-0.246	-0.192
$25,000 or more	0.193	0.605	-2.493*	-1.926*	-0.724	-0.490	-0.809	-0.599	0.103
Missing	0.354	-0.654	-0.528	-0.666	-1.104	-0.825	-0.525*	-0.429	0.086
Person most knowledgeable on income									
Respondent (ref*)	...	...	...	...	...	...	...	...	...
Other	-0.106	-0.197	-0.053	-0.576	-0.045	-0.051	-0.551*	-0.158	-0.302*
Employment status									
Employed full time (ref*)	...	...	...	...	...	...	...	...	...
Employed part time	-0.129	-0.055	-0.311	0.429	-0.113	-0.273	-0.451*	-0.199	-0.405*
Not employed	-0.356	-0.335*	-0.745*	0.197	-0.712*	-0.358	-0.683*	-0.584*	-0.214*
Education at landing									
Less than high school	-0.480	-0.527*	-0.031	0.552	-0.155	0.071	0.861*	0.345	0.189
High school	-0.405	-0.269	0.045	1.325*	-0.003	-0.219	0.986*	0.118	0.024
Completed postsecondary	-0.397	-0.174	-0.870*	0.677	-0.201	-0.191	0.217	0.082	-0.163
University degree (ref*)	...	...	...	...	...	...	...	...	...
Place of residence									
Toronto (ref*)	...	...	...	...	...	...	...	...	...
Montreal	-0.384	-0.026	0.339	-0.347	-0.066	-0.016	-0.465*	-0.176	-0.507
Vancouver	-0.274	0.250	-1.199	-0.125	0.861	0.285	0.006	0.354*	0.311*
Calgary, Edmonton	0.583	0.588*	0.046	-0.120	0.979*	1.419*	0.422*	0.490*	0.254
Other	-0.163	-0.016	0.816*	-0.427	0.822*	0.494	-0.029	0.921*	0.167
Children in household									
No children (ref*)	...	...	...	...	...	...	...	...	...
One	0.033	-0.154	-0.546	0.175	0.937*	-0.262	-0.166	-0.131	-0.301*
Two or more	-0.776*	-0.308	-0.641	0.060	-0.536	-0.650*	-0.319	-0.395*	-0.490*
Sponsorship									
None (ref*)	...	...	...	...	...	...	...	...	...
Spouse or child	1.646*	0.888*	1.001*	0.805	0.596	0.437	0.209	0.646*	0.390*
Parent or grandparent	0.507	0.315*	0.526	0.314	0.060	0.209	0.264	0.282	0.310*
Member of organization									
No (ref*)	...	...	...	...	...	...	...	...	...
Yes	0.061	0.239	0.247	0.259	0.511*	0.551*	-0.316*	-0.199	0.218
GDP/capita	-0.044*	-0.058*	-0.048	-0.083	-0.129*	-0.079*	-0.057*	-0.139*	0.198*
Constant	-0.172	0.279	0.641	-0.365	0.343	0.050	-0.674*	1.097*	-0.462

* statistically significant or significantly different from a reference group (ref) at 0.1 or better

A = North America, Western Europe, Oceania   B = Eastern Europe   C = Caribbean, Guyana
D = Central, South America   E = Sub-Saharan Africa   F = West Asia, Middle East, North Africa
G = Eastern Asia   H = Southeast Asia   I = South Asia

Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

Table 6 Ordinary least squares regression on the amount remitted by region of birth

Region	A	B	C	D	E	F	G	H	I
Sex					β coefficient				
Men (ref*)	...	...	...	...	...	...	...	...	...
Women	-0.536	-0.086	-0.083	-0.445	-0.229	-0.268	0.056	0.048	-0.173
Age group									
15 to 24	-0.747	-0.074	-0.155	-0.408	-0.179	-0.438*	0.046	-0.136	-0.147
25 to 34 (ref*)	...	...	...	...	...	...	...	...	...
35 to 44	0.157	-0.154	-0.030	-0.077	0.137	-0.292*	-0.143	0.041	-0.077
45 to 54	-0.147	-0.036	-0.418	0.852	0.509	-0.031	-0.019	-0.014	-0.003
55 or older	-0.317	-0.206	-0.416	-1.125	-1.073	0.217	-0.390	-0.095	-0.144
Family income									
Less than $10,000	..	-0.414	-0.163	0.786	-0.165	-0.823*	-0.298	-0.916*	-0.549
$10,000 to $24,999	0.354	-0.476*	-0.256	-0.441	-0.435*	-0.524*	-0.047	0.109	-0.472*
$25,000 to $44,999 (ref*)	...	...	...	...	...	...	...	...	...
$45,000 to $69,999	0.271	0.161	-0.093	0.009	0.157	0.422*	0.095	0.418*	0.232*
$70,000 or more	1.233*	0.331*	0.024	0.901*	0.823*	0.549*	0.361*	0.486*	0.363*
Savings abroad									
No saving abroad (ref*)	...	...	...	...	...	...	...	...	...
Less than $5,000	0.101	-0.133	0.109	0.330	0.479	0.048	0.633*	-0.100	-0.069
$5,000 to $24,999	0.791	0.263	-0.274	-0.732	0.551	0.613	-0.037	0.140	0.175
$25,000 or more	0.443	0.803*	2.865	-1.025	-0.831*	0.571	-0.021	0.201	-0.225
Missing	0.054	-0.648*	0.419	-0.921	-0.817	-0.374	0.209	0.506*	-0.263
Person most knowledgeable on income									
Respondent (ref*)	...	...	...	...	...	...	...	...	...
Other	0.539	0.029	-0.015	-0.047	-0.168	-0.037	-0.219	-0.161	0.104
Employment status									
Employed full time (ref*)	...	...	...	...	...	...	...	...	...
Employed part time	-0.387	-0.151	0.072	-0.534	0.157	0.061	-0.072	-0.220	-0.204
Not employed	0.230	-0.001	-0.049	-0.567*	0.044	-0.110	0.017	-0.164	-0.210*
Education at landing									
Less than high school	0.881	-0.621	-0.466*	-0.801	-0.499	0.022	-0.296	-0.396*	-0.066
High school	0.382	-0.048	-0.636*	-0.646	-0.540*	0.044	-0.261	-0.263	-0.149
Completed postsecondary	0.768*	-0.183	-0.566*	-0.540	-0.244	0.204	-0.172	-0.086	-0.031
University degree (ref*)	...	...	...	...	...	...	...	...	...
Place of residence									
Toronto (ref*)	...	...	...	...	...	...	...	...	...
Montreal	0.188	0.030	0.208	0.290	-0.676*	0.101	0.094	0.214	0.296
Vancouver	0.773	-0.029	0.987	0.538	-0.242	0.011	-0.065	0.072	0.423*
Calgary, Edmonton	1.079*	0.187	-0.714	0.037	-0.223	0.215	0.234	0.061	0.064
Other	0.870*	-0.015	-0.092	0.404	-0.427	-0.019	-0.074	0.001	0.211
Children in household									
No children (ref*)	...	...	...	...	...	...	...	...	...
One	-0.645	-0.016	-0.062	0.361	-0.109	-0.618*	-0.025	-0.210	-0.121
Two or more	-0.520	0.109	-0.317	-0.149	-0.428*	-0.381*	0.069	-0.273*	-0.352*
Sponsorship									
None (ref*)	...	...	...	...	...	...	...	...	...
Spouse or child	0.711	0.830*	0.381	-0.488	0.623*	0.225	-0.011	0.047	-0.070
Parent or grandparent	0.732	0.063	0.242	-0.339	0.114	0.261	0.210	0.073	0.060
Member of organization									
No (ref*)	...	...	...	...	...	...	...	...	...
Yes	0.493	-0.072	-0.065	-0.083	0.044	0.051	0.052	0.067	-0.188*
GDP/capita	0.033	-0.020	0.022	-0.251*	-0.013	0.043*	-0.007	-0.005	-0.123
Constant	5.343*	7.306*	7.322*	9.694*	7.892*	7.450*	7.645*	7.038*	8.384*

* statistically significant or significantly different from a reference group (ref) at 0.1 or better
A = North America, Western Europe, Oceania
B = Eastern Europe
C = Caribbean, Guyana
D = Central, South America
E = Sub-Saharan Africa
F = West Asia, Middle East, North Africa
G = Eastern Asia
H = Southeast Asia
I = South Asia
Source: Statistics Canada and Citizenship and Immigration Canada, Longitudinal Survey of Immigrants to Canada, 2000/2001 cohort.

Overall, the significance of financial and family characteristics was far more evident in terms of the decision to remit than for the amount sent. Furthermore, the results suggest a considerable interregional consistency in some of the factors correlated with remittance behaviour, most notably financial and familial characteristics.

In other instances the correlates of remittance behaviour appear to be more evident for specific regions. For example, women from South Asia and West Asia, the Middle East and North Africa had a negative correlation with the likelihood of remitting. Such correlations were not evident for other regions.

In the literature, evidence on the significance and direction of the correlation between education and remitting is mixed. This was also the case here. Among immigrants from Eastern Europe, those with less than high school education were less likely to remit than those with a university degree. Among immigrants from the Caribbean and Guyana, those with a postsecondary certificate or diploma were less likely to remit than those with a degree. The correlation runs in the opposite direction among immigrants from Central and South America and from Eastern Asia, as immigrants with lower levels of educational attainment were more likely to remit. However, remitters with lower levels of educational attainment sent less money than those with university training for three of the nine regions.

Finally, a strong, positive correlation was seen between membership in an organization and remitting for immigrants from sub-Saharan Africa and West Asia, the Middle East and North Africa.

Summary

During their initial years in Canada, a significant minority of new immigrants send money to family or friends abroad. On an annual basis, the average amount was approximately $1,450, accounting for about 6% of personal and 3% of family income before taxes.

Remittance behaviour varied greatly. Within a single landing cohort, the incidence of remitting among immigrants from different countries ranged from less than 10% to around 60%, while the annual amounts ranged from about $500 to almost $3,000. Financial and family characteristics were consistently significant among immigrants from all regions. In contrast, other factors, such as sex and education, were significant for some regions but not others. Furthermore, large intercountry and interregional differences remained after socioeconomic characteristics and group composition were taken into account.

Perspectives

■ **Notes**

1. Considerable emphasis has been placed on earnings trajectories after arrival, economic returns to foreign credentials and experience, ability to find employment in an area of specialization, and incidence of low income. For a review see Picot 2004.

2. Predicted probabilities for each independent variable were estimated by setting the other independent variables to their mean values.

3. Some researchers have used the Heckman selection model (1976) to take into account the possibility that the sample of immigrants who remit may be a selective sample of those who could have remitted (Funkhouser 1995; Brown and Piorine 2005). Several Heckman models were run using different specifications to address this issue but evidence of selectivity was not found. Our results are consistent with several studies that also report that selection effects are modest or not statistically significant (Menjivar et al. 1998; Funkhouser 1995).

4. All dollar figures have been rounded to the nearest $100. Remittance amounts reported 2 years and 4 years after arrival have not been adjusted for inflation. Questions about remitting and remittance amounts were included in the income section of the LSIC questionnaire. This section includes numerous questions about the income of the respondent and respondent's family—all of which refer to the 12-month period preceding the interview. At the end of the section, respondents were asked if they had remitted since their last interview, and if so, how much they had remitted. Here, the reference period shifts from the 12 months preceding the survey to the 18- or 24-month period preceding the survey (the duration varies between Waves 2 and 3). Given the sudden shift in the reference periods, it is not clear if respondents who reported remittance amounts had a 12-month or 18/24-month reference period in mind.

5. The estimates in Chart A are computed by taking the average of the incidences of remitting at LSIC Wave 2 (i.e. 24 months after landing) and at LSIC Wave 3 (i.e. 48 months after landing). This approach reduces standard errors around the estimates (which are still large in many cases) and simplifies the presentation of the data. The same approach is used for Chart B.

6. For immigrants who remitted, average family income after expenditures on housing (rent or mortgage, taxes and utilities) was also computed and used to estimate remittances as a share of family income after housing expenditures. For immigrants in all three admission categories, remittances accounted for about 4.0% to 4.9% of family income after housing expenditures

7. In this section, within-region correlations with P-values of 0.1 or better are flagged as statistically significant. The usual threshold of 0.05 was relaxed because of the small number of cases in several of the models.

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A profile of the Canadian Forces

Jungwee Park

Canada's military makes up a small but significant segment of Canadian society. The Canadian Forces (CF) are an important part of the country's national image, both at home and abroad. On the international front, these highly trained men and women are repeatedly called upon to participate in the humanitarian, peacekeeping and security missions of international organizations such as the UN and NATO; while domestically, their expertise is often needed in search and rescue operations and aiding citizens cope with natural disasters such as forest fires, floods, avalanches and ice storms. Additional responsibilities include assisting in the protection of Canada's fisheries and in the detection and interception of shipments of illegal drugs.

The forces also contribute significantly to the economy. With more than 111,000 people on the payroll (including about 24,000 civilian workers), the Department of National Defence (DND) and CF together are Canada's second largest employer and the single largest public service employer, making a significant contribution to local, provincial and territorial economies (DND 2008a). In the fiscal year 2006/2007, Canada's military spending was $15.7 billion (DND 2008b).

The military generally increased in the late 1980s, reaching its highest numbers in 1991 with more than 120,000 people (Chart A). The subsequent decline continued until 2001 when personnel numbered 81,600, about a 33% decrease. Since then, the forces have grown steadily, reaching 87,700 in 2006. These changes are related to the international political climate—the rapid decline occurring after the end of the Cold War and the recent increase coinciding with the war on terror since 9/11.[1]

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This article profiles the personnel of the Canadian Forces as a special group distinct from the rest of the Canadian labour force. Using the Canadian Forces Supplement to the Canadian Community Health Survey (CCHS) – Mental Health and Well-being, it also compares the military's prevalence rates of work stress and other work-related mental health issues with those of the civilian working population and investigates whether any specific groups experience a higher prevalence.

The distinctive work arrangements and responsibilities of the military, especially missions to conflict-ridden places, such as Bosnia-Herzegovina, Rwanda or Afghanistan,[2] warrant examining the psychological well-being and work stress of CF members. However, wartime conditions are not the only source of

Chart A After hitting their nadir in 2001, military personnel increased for the next five years

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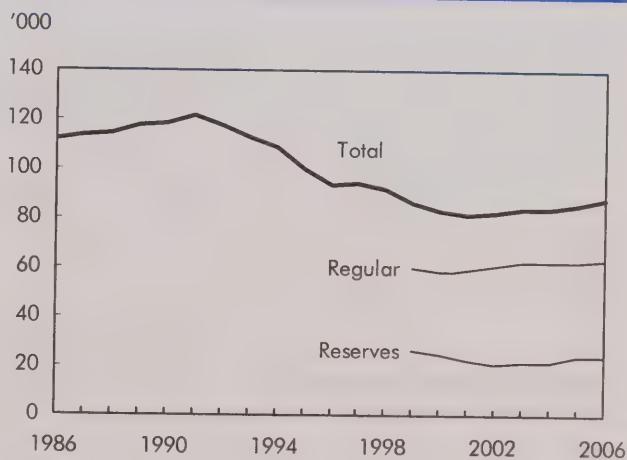
Source: Department of National Defence, Military personnel and wages and salaries, 1986 to 2006.

Table 1   Characteristics of military personnel and civilian workers, aged 15 to 64

		Regular forces			Reserve forces			
	All military	All regular	Officer	Non-commis-sioned	All reserve	Officer	Non-commis-sioned	Total civilian workers
					%			
Sex								
Men	85.3 *	87.8 *	85.6 *	88.4*	79.2*(*)	84.9*	78.1*	53.3
Women	14.7 *	12.2 *	14.4 *	11.6*[*]	20.8*(*)	15.1*(*)	21.9*(*)[*]	46.7
Age								
15 to 24	19.3	9.9 *	10.4 *	9.7*	42.1*(*)	10.2*	48.0*(*)[*]	19.3
25 to 39	51.8 *	57.7 *	49.2 *	60.2*[*]	37.4*(*)	48.6*	35.4 (*)[*]	33.3
40 to 54	28.3 *	32.0 *	39.3 *	30.0*[*]	19.2*(*)	37.6	15.8*(*)[*]	36.6
55 to 64	0.6 *	0.4E*	1.1E*	F	1.3*(*)	3.6*(*)	0.9E*[*]	10.7
Education[1]								
Less than high school	6.5 *	7.1 *	F	9.0*	4.3*(*)	F	5.7*(*)	13.3
High school diploma	28.0 *	31.4 *	5.5 *	38.7*[*]	15.2*(*)	4.9*	18.5 (*)[*]	19.5
Some postsecondary	12.7 *	13.1 *	6.2	15.1*[*]	11.0*(*)	7.0	12.2*(*)[*]	6.6
Postsecondary degree/diploma	52.6 *	48.2 *	88.1 *	37.1*[*]	69.4*(*)	88.1*	63.4*(*)[*]	59.6
Immigrants	5.9 *	4.1 *	6.0 *	3.6*[*]	10.0*(*)	9.2*(*)	10.2*(*)	20.6
Official language								
English only	53.8 *	51.4 *	26.6 *	58.3*[*]	59.9*(*)	54.6*(*)	60.9*[*]	64.5
French only	3.8 *	3.0 *	F	3.8*	5.9*(*)	2.2* E	6.6*(*)[*]	10.7
Both	42.2 *	45.6 *	73.1 *	37.8*[*]	33.9*(*)	43.1*(*)	32.2*(*)[*]	23.5
Neither	0.2E*	F	F	F	F	F	F	1.3
Visible minority	6.4	4.5 *	3.4 *	4.8*[*]	11.1*(*)	5.9*(*)	12.0*(*)[*]	17.1

* significantly different from total civilian workers at 0.05 or less
(*) significantly different from the same column of regular forces at 0.05 or less
[*] significantly different from officers at 0.05 or less
1. Population 25 or older.
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

stress—in addition to military-specific stressors such as deploying overseas, frequent change of station and temporary duty away from home, day-to-day aspects of the job like work responsibilities, work hours, or difficulties with supervisors have a significant effect on the psychological well-being of military personnel (Pflanz and Sonnek 2002; Sudom et al. 2006). CF members may be exposed to numerous stressful events and be at risk of experiencing job stress.

Moreover, psychological ill health of military personnel may compromise their physical health, impair work performance or decrease quality of life; it also has a significant economic impact, in both civilian and military populations (Fikretoglu et al. 2007; Pflanz and Ogle 2006; Hourani et al. 2006; Dobreva-Martinova et al. 2002).

Regular and reserve forces differ

The two primary components of the CF are regular and reserve forces.[3] Generally speaking, while the regular force consists of full-time personnel, most members of the reserves are part-time personnel (for more detailed classifications see *Data source and Definitions*). The reserves are used to mobilize or expand the army when needed. In other words, they are eligible to deploy on operations, and in recent years more and more reservists were supporting overseas missions (DND 2008c). As well, the reserves augment the professional forces by providing soldiers, units or specialists to the CF (DND 2008c). For example, reservists in Afghanistan provide their expertise in medicine and psychological operations in addition to combat responsibilities (Castonguay 2008).

Table 2   Characteristics of military personnel

	Men	Women	Regular	Reserves	All military
			%		
Rank					
Junior	58.7	66.0*	56.3	68.2(*)	59.8
Senior	21.2	14.1*	21.8	16.2(*)	20.1
Officer	20.2	19.8	22.0	15.6(*)	20.1
Region					
Atlantic	22.0	18.8*	22.7	18.8(*)	21.6
Quebec	16.7	18.1	15.1	21.3(*)	16.9
Central	33.6	36.3*	34.4	33.2	34.0
Western	27.7	26.8	27.9	26.8	27.6
Service					
Land	57.4	47.6*	50.2	70.1(*)	56.0
Air	23.9	30.6*	31.5	8.7(*)	24.9
Sea	17.0	18.8	18.3	14.8(*)	17.3
Communication	1.7	3.0*	F	6.5	1.9
Years in service					
Less than 10	32.9	41.8*	23.7	59.9(*)	34.2
10 to 24	53.4	52.8	62.9	29.9(*)	53.3
25 or more	13.7	5.4*	13.4	10.3(*)	12.5
Occupation					
Combat arms	32.3	10.8*	22.2	46.1(*)	29.1
Communications	6.0	5.0	6.5	4.3(*)	5.9
Maritime	5.1	4.2*	4.8	5.5	5.0
Maritime communications	3.5	3.5	3.7	3.1	3.5
Maritime technical	3.2	0.4 E*	3.9	F	2.8
Aviation	6.9	4.3*	8.0	2.9(*)	6.5
Aviation technical	7.4	5.0*	9.1	2.1(*)	7.1
Administration, etc.[1]	19.0	46.7*	23.9	20.8(*)	23.0
Engineering	2.3	1.3*	2.4	1.5(*)	2.1
Technical	8.9	1.8*	9.1	4.8(*)	7.9
Medical	3.4	13.0*	4.8	4.9	4.8
General officer specialist	2.0	4.1*	1.6	3.9(*)	2.3

* significantly different from men at 0.05 or less
(*) significantly different from regular forces at 0.05
1. Includes logistics, security, intelligence or emergency services.
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Over the last five years, the regular forces and the reserves showed similar increasing trends. In 2006, the CF had about 64,000 regular members and 24,000 reservists. But reserve personnel tend to be much younger than regular force members. More than 40% of reservists

were under 25, compared with only 10% of full-time military personnel (Table 1). However, this age cohort in the regular force showed a significant increase in recent years—by 2007, 17% (15% of officers and 18% of non-commissioned members) were under age

25 (calculation based on DND 2008d)—as a result of more young recruits.

More than one in five reservists were women compared with about one in eight in the regular forces in 2002. Also, while less than 5% of regular force personnel were immigrants or from a visible minority, more than 10% of reservists were. This reflects the many young reserve members from visible minority or immigrant groups.

Overall, 60% of CF personnel were junior non-commissioned members, from privates to master corporals; 20% were senior non-commissioned members, sergeants to chief warrant officers; and the remainder were officers. About 68% of reservists were junior non-commissioned members and 16% were officers, compared with 56% and 22% of the regular forces (Table 2). The rank structure of the regular forces changed little from 2002 to 2007 (DND 2008d).

Regular and reserve forces differed in terms of environment (land, air or sea). Among reservists, 70% were in the army, 9% air force and 15% navy, compared with 50%, 32%, and 18% for regular personnel. In terms of occupation, members of the reserve and regular forces play different roles in their services—reservists tended to concentrate much more in combat arms (e.g. infantry battalion, or armoured or artillery regiment) than regular force personnel (46% vs. 22%).

Members of the CF differ from civilian workers

Members of the military differed substantially from civilian workers aged 15 to 64 with respect to

Data source and definitions

The Canadian Community Health Survey (CCHS) – Canadian Forces supplement on mental health was used to profile military personnel. The target population for this survey was all full-time regular members of the Canadian Forces, and reservists who had paraded at least once in the past six months. In order to improve the efficiency of the survey design, each target population was stratified by sex and rank. Collection took place between May and December 2002 to allow for spreading the field workload and more time in which to contact respondents departing or returning from deployments or training courses. The vast majority of computer-assisted interviews were conducted face-to-face during working hours in private on-base rooms. A total of 5,155 regular forces personnel were interviewed, a response rate of 79.5%. For the reserves, the numbers were 3,286 and 83.5% (Statistics Canada 2003).

The 2002 Canadian Community Health Survey (CCHS) – Mental Health and Well-being was used to compare the general working population with the Canadian Forces. (The CCHS sample did not include regular forces personnel, but may have picked up some members of the reserves.) The survey covered people aged 15 or older living in private dwellings in the 10 provinces. Most interviews (86%) were conducted in person; the remainder, by telephone. Proxy responses were not accepted. The 36,984 interviews represented a response rate of 77%.

General working population were those aged between 15 and 64 working at jobs or businesses in the past 12 months.

Members of the regular forces are full-time personnel. They consist of officers and non-commissioned members in continuing, full-time military service. Its all units, other elements, and members are at all times liable to perform any lawful duty. When enlisting, the members are signing on for an initial engagement ranging from three to nine years, not including subsidized training or education. The initial engagement can be followed by an indefinite period of service or a continuing engagement. According to the current terms of service, they can retire after 25 years.

Members of the reserve forces are part-time military personnel. They consist of officers and non-commissioned members enrolled for other than continuing, full-time military service when not on active service. Its all units, other elements, and all members may be ordered to train for such periods as are prescribed in regulations made by the Governor in Council and may be called out on service to perform any lawful duty other than training at such times and in such a manner as by regulations or otherwise are prescribed by the Governor in Council. Service in the reserves is voluntary and is for an indefinite period. Reservists are enrolled to serve on a part-time basis but may volunteer for full-time employment.

The reserve force has four sub-components: Primary Reserve, Cadet Instructor Cadre (CIC), Canadian Rangers, and the Supplementary Reserve (DND 2008g).

The **Primary Reserve** is the largest and is commonly what people refer to when using the term 'reserves.' Its personnel train regularly on a part-time basis with occasional periods of full-time service. It is divided into Naval, Army, Air, Communications, Health Services, Legal, and the National Defence Headquarters Primary Reserve List.

CIC officers are responsible for the safety, supervision, administration, and training of cadets aged 12 to 18.

Canadian Rangers provide a military presence that cannot conveniently or economically be provided by other components of the CF in sparsely settled northern, coastal, and isolated areas.

The **Supplementary Reserve** consists of former members of the regular and reserve forces. They do not perform training or duty but provide a pool of personnel that could be called out in an emergency (DND 2008e).

Reserve service falls in three classes: A, B and C. **Class A** is used for periods of service to a maximum of 12 consecutive days. A member of the Primary Reserve may be ordered to train on Class A only for an annual maximum of 60 days (DND 2004a). **Class B** is used for service of 13 or more consecutive days in a temporary full-time position on the instructional or administrative staff of a school or other training establishment; on such training attachment and such training course of such duration as may be prescribed by the Chief of the Defence Staff; or on duties of a temporary nature approved by the Chief of the Defence Staff, or by an authority designated by him, when it is not practical to employ members of the regular force on those duties. **Class C** service may be used at any authorized location, when the member is on full-time service and is serving with approval by or on behalf of the Chief of the Defence Staff in a regular force establishment position or is supernumerary to regular force establishment; or on either an operation or an operation of a type approved by or on behalf of the Chief of the Defence Staff.

Officer means a person who holds Her Majesty's commission in the Canadian Forces; a person who holds the rank of officer cadet in the Canadian Forces; and any person who pursuant to law is attached or seconded as an officer to the Canadian Forces. An officer is a leader trained to be responsible for a group of people. Higher levels of education and training are required for officers than non-commissioned members. Four rank groups are defined: General Officers, Senior Officers, Junior Officers, and Subordinate Officers.

A **non-commissioned member** is any person other than an officer, who is enrolled in, or who pursuant to law is attached or seconded otherwise than as an officer to, the CF. They fall into three rank groups: warrant officers, non-commissioned officers and privates.

nearly every demographic characteristic. CF personnel were much younger—more than 70% under 40 versus only 53% of civilians in 2002. This is not surprising since, unlike most other jobs, the forces still have a

compulsory retirement age. Less than 1% of CF members were 55 to 64, compared with 11% of the working population.

International military expenditures, 2001

Canada currently ranks 6th in NATO in terms of defence budgets and 17th in terms of defence spending as a share of gross domestic product (GDP).

	Total	Share of GDP
	US$ (billions)	%
Belgium	2.2	1.3
Canada	7.3	1.1
Czech Republic	1.1	2.2
Denmark	2.4	1.5
France	25.3	2.6
Germany	21.0	1.5
Greece	3.3	4.8
Hungary	0.8	1.8
Iceland	0.0	0.0
Italy	15.5	1.9
Luxembourg	0.1	0.8
Netherlands	5.6	1.6
Norway	2.8	1.8
Poland	3.7	1.8
Portugal	1.3	2.1
Spain	6.9	1.2
Turkey	5.1	5.0
United Kingdom	34.0	2.4
United States	310.5	2.9

Source: Department of National Defence 2008b.

Today's CF personnel, however, tend to be much older than 20 years ago. In 2007, only 28% of the regular forces were under 30 (DND 2008d) compared with 53% in 1988 (Strike 1989). This change in the age profile may reflect the general trend of population aging, delayed retirement, and the intentional decrease in new recruits as part of 1990s downsizing.[4] Similarly, in 2002, about one-quarter of regular personnel had less than 10 years of service compared with 56% in 1988 (Strike 1989).[5]

Compared with the general working population, about twice the proportion of CF personnel were bilingual. More than 40% (46% for the regular forces and 34% for reservists) spoke both official languages. Such high percentages are due to the high proportions of bilingual officers (73% in the regular forces) and members from Quebec (77% bilingual).[6]

Overall, the Canadian military is predominantly male. However, women's representation has risen in recent decades. In 2002, 15% of all personnel were women—12% in the regular forces and 21% of reservists—up from 2% in 1972 and 10% in 1988 (Strike 1989).[7]

Similar to their male colleagues, about one in five female members were officers in 2002. According to the most recent data (DND 2008d) for the regular forces, a higher proportion of women than men were officers (28% compared with 23%).

Women's roles in the CF are quite different from those of men. More than 30% of women belonged to the air force compared with 24% of men, while a smaller proportion were in the army (48% vs. 57%). Women worked in all types of military occupations including combat duty, but their distribution was considerably different from men's.[8] While about one-third of men in the CF reported combat arms as their occupation, 11% of women did so. In 2002, about one-half of women worked in administration, logistics, security, intelligence, or emergency services compared with 19% of men. This indicates that women still continue to be concentrated in the more traditional support areas, including medical and dental, with some increases in less traditional occupations, particularly naval operations and maritime engineering, and a modest increase in combat arms (Soeters and Van der Meulen 2006).

An international comparison shows that women in the Canadian military have played greater roles (see *Women in the military*). Canadian women account for a higher share of personnel in the armed forces and a much higher share of deployments than in many other countries.[9]

Visible minorities under-represented

A very small proportion of CF personnel were members of visible minorities—only 6% of all CF members (5% of regular forces and 11% of reservists) were visible minorities compared with 17% of the civilian working population. This is much lower than the U.S. military's rate of 33% (Office of the Under Secretary of Defense, Personnel and Readiness 2006). Only 3% of officers in the regular forces were members of visible minorities.

Similarly, a very small portion were immigrants (6% compared with 21%). The low rates of visible minority and immigrant members may be related to the citizenship requirement for joining the CF. Currently, only Canadian citizens can join the regular forces (DND 2008e).[10]

Women in the military

Canada was one of the first NATO member countries to legally admit women to the military (1951) and has among the highest participation of women in terms of proportion of the force and deployment responsibilities.

	Year of admittance	Proportion in 2005	Deployed in 2005/2006
		%	%
Belgium	1975	8.3	20.6
Bulgaria	1995	6.0	
Canada	1951	12.6	26.8
Czech Republic	Early 1980s	12.2	
Denmark	1962	5.0	6.0
France	1972	12.8	5.0
Germany	1975	6.0	3.5
Greece	1979	16.0	
Hungary	1996	4.3	8.0
Italy	1999	1.0	
Latvia	1991	20.0	
Lithuania	1991	9.1	
Luxembourg	1980	5.7[1]	
Netherlands	1979	9.0	
Norway	1977	6.3	
Poland	1988	0.5	1.3
Portugal	1992	8.4	Up to 10
Romania	1973	5.0	
Slovakia	Early 1980s	7.1	
Slovenia	1991	15.4	
Spain	1988	10.7	
Turkey	1955	4.0	
United Kingdom	1949	9.0	
United States	1948	15.5	11.0

1. 2006.
Source: Committee on Women in the NATO Forces (NATO 2008).

However, even after excluding recent immigrants (in Canada less than 10 years) and adjusting for age, significant differences in visible minority and immigrant representation remain between the CF and the civilian working population (data not shown). The under-representation of visible minorities in the CF can be explained by many factors (Jung 2007): the importance of education, family, and ethnic identity;[11] a relatively low ranking of military service as a career, combined with the negative image provided by their own native militaries; and insufficient numbers in senior ranks to provide the necessary positive role models. However, visible minority representation in the CF is important because they are the fastest growing segment of the Canadian population, particularly in the traditional recruitment target age group of 17 to 24 (Rueben 2004).

Wages, income and education

Whereas the earnings of civilian workers remained relatively constant at $35,000 (in 2002$) for the last decade and a half, CF personnel experienced steady increases since the late 1990s. On average, they have earned more than other public sector employees since 1999 (Chart B).[12] Earnings of reservists increased in recent years, although their average was as low as $21,000 in 2006, which is not surprising given that as part-timers many of them had other jobs. As well, about 40% of them were still students (DND 2004b).

Rising military wages and salaries correlate with the age structure of the members. The aging of CF personnel was accompanied by increased levels of experience. In 1988, 35% of personnel had served 10 to 24 years and only 9% had 25 or more years of service (Strike 1989). In 2002, 63% had served 10 to 24 years and 13% had 25 or more.

The steady increase in earnings also coincided with rising levels of education. To meet the high technical demands of modern warfare, more recognized training and education are necessary. In 2002, more than half of CF members aged 25 or older had a postsecondary degree or diploma (88% of officers; 37% of non-commissioned members in the regular forces, 63% in the reserves). In 1988, 19% of regular force personnel had a postsecondary degree or diploma[13] and 26% had less than high school graduation (Strike 1989).[14] By 2002, postsecondary graduation had increased to 48% and less than high school graduation had fallen to 7%. Even with the increase, postsec-

Chart B CF members had higher overall earnings than civilian workers

$ '000
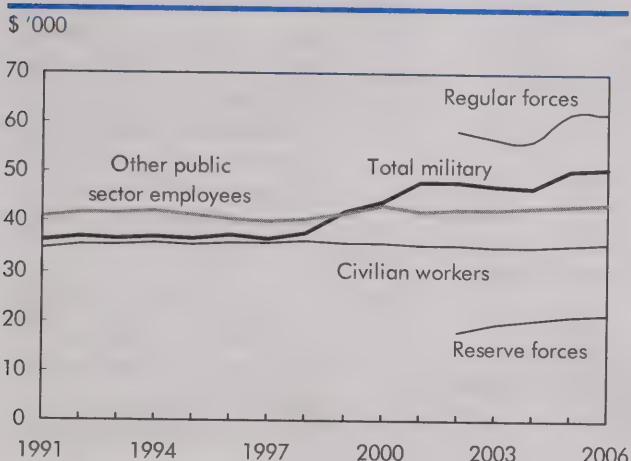
Note: Earnings in 2002 dollars.
Sources: Department of National Defence, Military personnel and
wages and salaries; Statistics Canada, Survey of
Employment, Payrolls and Hours, 1991 to 2006.

Not surprisingly, incomes of CF personnel vary considerably by rank—personnel are paid first by rank and then by specific occupation. Among men, the median income in 2002 was $73,000 for officers and $48,000 for non-officers.

As well, clear differences were evident in the median incomes of men and women for all groups except the reserves. Among officers, the median income for men was higher than for women ($73,000 vs. $59,000), mainly due to the high share of men found at higher ranks. As the forces are a bottom-loaded system, it may take considerable time for women to achieve greater representation at senior levels (Truscott and Dupre 1998).

The income gap between the sexes may also be related to the concentration of women in more traditional support areas. For instance, only 4% of women in the regular forces had participated in three or more deployment missions lasting three months or longer, compared with 26% of men. In addition, women's years of service were much lower than men's—only

ondary graduation among CF personnel was lower (53%) than for civilian workers aged 25 or older (59%). However, members of the reserves had higher rates (69%), reflecting on-campus recruiting.[15]

As with earnings, the annual income of military personnel was also higher than that of the full-time working population. In 2002, the median personal income of men in the CF was $50,000 compared with $40,000 for their civilian counterparts (Chart C). Among women, even non-commissioned members had higher incomes than the Canadian median ($42,000 vs. $30,000). The higher incomes for CF members may be explained in part by a variety of allowances received in addition to their salaries—for example, for exceptional hazard, field operations, paratroops, aircrew, rescue specialist, diving, sea duty and submarine.

Chart C CF members had higher median personal income than civilian full-time workers

'000
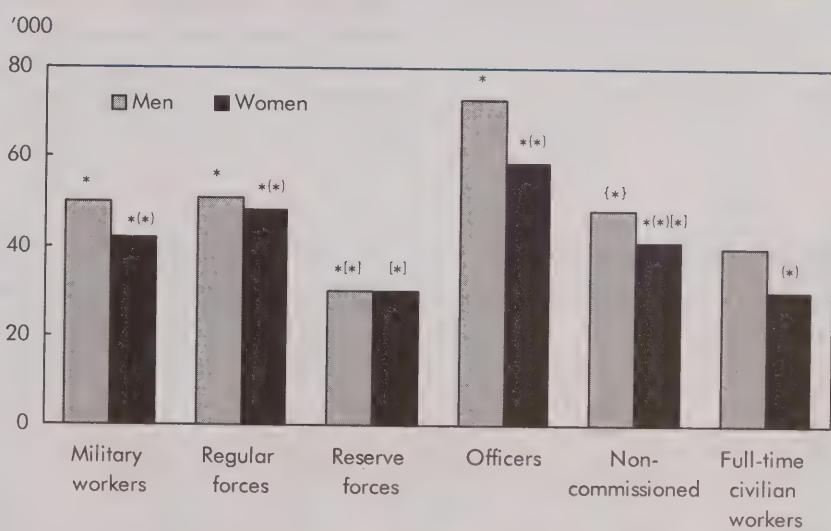
* significantly different from the same sex group of all full-time civilian workers at 0.05 or less
(*) significantly different from men of the same group at 0.05 or less
[*] significantly different fom the same sex group of regular forces at 0.05 or less
{*} significantly different from the same sex group of officers at 0.05 or less
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Table 3   Characteristics of psychological well-being among members of the military

	All	Regular forces	Reserve forces	Civilian workers
			%	
Life dissatisfaction	4.6*[1]	5.0*	3.8(*)[1]	4.0
Negative self-perceived mental health	7.8*	9.1*	4.8*[1](*)	5.9
Alcohol dependence	4.8*[1]	4.2*[1]	6.2*[1](*)[1]	3.3
Major depression	6.9*	8.0*	4.2(*)	4.8

* significantly different from total civilian workers at 0.05 or less
(*) significantly different from regular forces at 0.05 or less
1. significance disappeared after age-sex adjustments.
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

5% had served for 25 or more years in 2002, compared with 14% of men.[16]

Psychological well-being

Small but statistically significant differences in psychological well-being existed between full-time CF members and the civilian workforce in 2002 (see *Psycho-social well-being*). Members of the regular forces were more likely to be dissatisfied with their life (5% vs. 4%), to perceive their mental health as fair or poor (9% vs. 6%) and to have had major depression in the past 12 months (8% vs. 5%). As well, compared with reservists, regular forces personnel showed a higher prevalence of depression and negative self-perceived mental health (Table 3).

For better comparability, the psychological well-being of civilian full-time managers was compared with that of military officers in the regular forces (Chart D). Similarly, non-commissioned personnel were compared with non-managers.[17] Military officers had higher rates of negative self-perceived mental health and major depression; and non-officers seemed to have lower psychological well-being (Chart E). More than 5% of non-commissioned members were dissatisfied with their life and 9% felt that their mental health was fair or poor. Compared with less than 5% of non-managers, 8% of non-commissioned staff had had a major depression in 2002.

Differences in alcohol dependence disappeared after age-sex adjustments. Higher rates of dependence among CF personnel were due to their being young and predominantly male.

To investigate whether any specific groups in the CF are under a greater risk of psychological ill health and work stress, multivariate logistic regression models were developed. Associations between psychological health and military-related variables such as rank, type of CF (regular or reserve), career deployments, and months absent due to military responsibility were examined while controlling for possible confounders such as age, marital status, income and education. Psychological well-being and

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Psycho-social well-being

Life dissatisfaction: very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied. For this article, respondents answering very dissatisfied or dissatisfied were considered to have life dissatisfaction.

Negative self-perceived mental health: excellent, very good, good, fair or poor. For this study, respondents answering fair or poor were considered to be in negative self-perceived mental health.

Major depression (past 12 months) is a period of two weeks or longer with persistent depressed mood and loss of interest or pleasure in normal activities, accompanied by symptoms such as decreased energy, changes in sleep and appetite, impaired concentration, feelings of guilt or hope-

lessness, or suicidal thoughts. The definition and criteria are from the *Diagnostic and Statistical Manual of Mental Disorders* used by the American Psychiatric Association.

Alcohol dependence (past 12 months) is measured by questions on alcohol use and behaviour and attitudes towards drinking. The definition includes alcohol-related withdrawal, loss of control, or social or physical problems. The questions are based on an international instrument that provides diagnostic estimates for psychoactive substance use disorder.

The algorithms used to measure the 12-months prevalence of major depression and alcohol dependence are available in the Annex of the 2004 Health Reports supplement (Statistics Canada 2004).

Chart D   Military officers had higher work stress than civilian managers

%
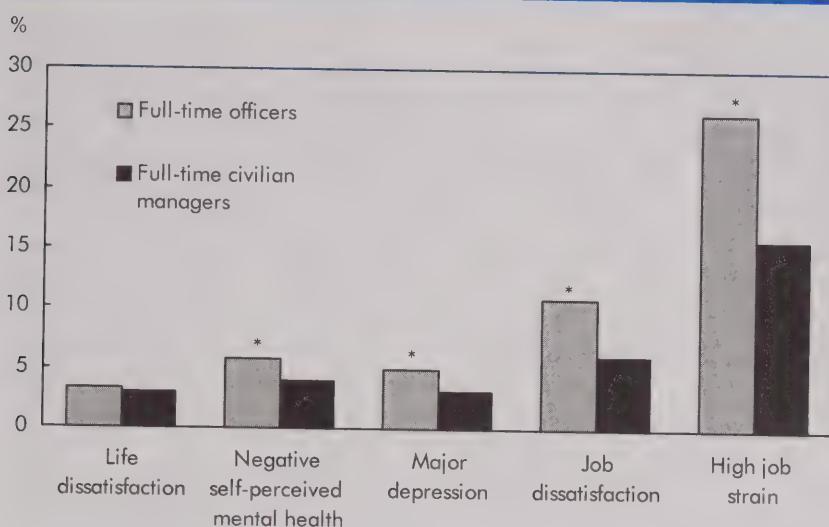
* significantly different from full-time civilian managers at 0.05 or less
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

more than 12 months in the past 24 were almost twice as likely to have alcohol dependence as those away less than 6 months.

Members of the regular forces were almost twice as likely as re-servists to perceive their mental health as poor or fair rather than good, very good, or excellent. Women in the CF were 1.7 times more likely than men to have been depressed in the past 12 months. Compared with married personnel, those never or previously married had a significantly higher prevalence of mental health problems such as life dissatisfaction, negative self-perceived mental health, and alco-hol dependence (data not shown). These findings on inter-group dif-ferences are generally consistent with studies on the U.S. military (Hourani et al. 2006).

work stress were measured by prevalence of life dissatisfaction, negative self-perceived mental health, 12-month major depres-sion, job dissatisfaction, high job strain, and alcohol dependence. Since the analyses were based on cross-sectional data, neither causal-ity nor temporal ordering of events can be inferred.

Being away from home for long periods of time due to deploy-ment, exercises, sea time, individual or collective training courses, tem-porary duty, aid to civil authorities, or Canadian disaster relief missions was associated with life dissatisfac-tion and alcohol dependence (Ta-ble 4). The effects were significant even after controlling for other socio-demographic and military-occupation variables such as sex, age, personal income, education, deployments and years in the serv-ice. CF members away from home

Chart E   Military non-commissioned personnel had higher life and job dissatisfaction than civilian non-managers
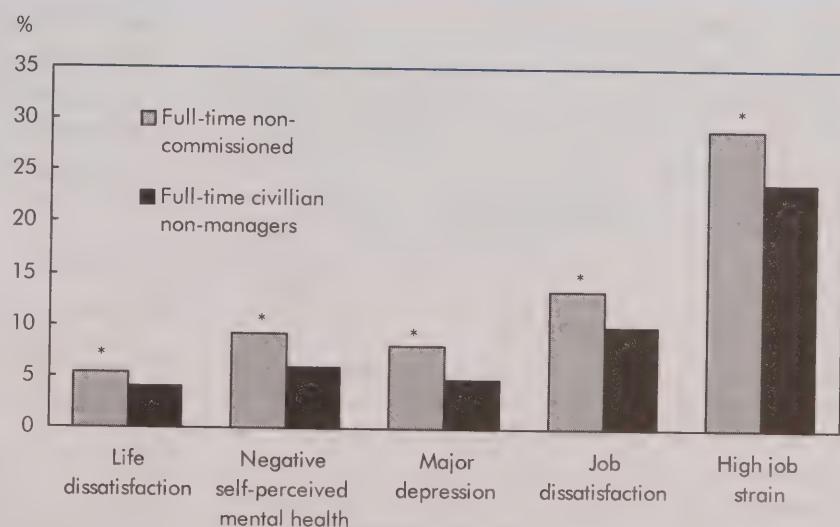
%

* significantly different from full-time civilian workers at 0.05 or less
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Table 4 Adjusted odds ratios for psychological well-being and work stress among military personnel

	Life dissatisfaction	Negative self-perceived mental health	Major depression	Job dissatisfaction	High job strain	Alcohol dependence
	adjusted odds ratio					
Sex						
Men (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
Women	1.10	1.44*	1.70*	0.99	1.24*	0.40*
Rank						
Officers (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
Non-commissioned	1.50*	1.62*	1.65*	1.16	1.14	1.58*
Total forces						
Regular	1.48*	1.89*	2.05*	1.60*	1.44*	1.03
Reserve (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
Number of deployments in career						
None (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
1 to 2	0.75*	0.82	0.94	1.10	0.98	1.25
3 or more	0.97	1.12	1.10	0.92	0.92	0.87
Months away from home in past two years						
Less than 6 (ref*)	1.00	1.00	1.00	1.00	1.00	1.00
6 to 12	0.94	0.99	0.90	0.99	1.11	1.21
More than 12	1.26*	1.09	1.09	1.26	1.56*	1.71*

* significantly different from reference group (ref) at 0.05 or less
Note: Adjusted for age, marital status, personal income, education and years served.
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

Work stress

Full-time CF members[18] and civilian workers reported different types of work stress (see *Measuring stress*). CF personnel indicated higher levels of job security and co-worker support. Less than 2% of military personnel felt job insecurity compared with 14% of full-time civilian workers (Table 5). High co-worker support among CF members may be related to the nature of military work, which involves close collegial collaboration and clear role definitions.

On the other hand, members of the regular forces were less likely to be satisfied with their job—13% reported job dissatisfaction compared with 10% of civilians. As well, 28% of the forces had high job strain compared with 23% of civilians.[19] This indicates that more CF personnel felt their job requirements did not match their capabilities, resources or needs.

Table 5 Work stress among members of the regular forces

	Regular forces	Civilian full-time workers
	%	
Job insecurity	1.8*	14.3
Job dissatisfaction	12.7*	9.5
High job strain	28.4*	22.9
Low co-worker support	37.4*	40.7
Self-perceived work stress	30.8*[1]	33.2

* significantly different from civilian full-time workers at 0.05 or less
1. significance disappeared after age-sex adjustments.
Source: Statistics Canada, Canadian Community Health Survey Cycle 1.2, 2002.

To be more specific, 26% of military officers had high job strain compared with 16% of full-time civilian managers. Compared with non-managers in civilian jobs, non-commissioned members of the military showed higher job strain (29% vs. 24%) and job dissatisfaction (13% vs. 10%).

Multivariate analyses reaffirmed that high job strain was also associated with months away from home due to deployment responsibilities—CF personnel away from home more than 12 months were 1.6 times more likely to have job stress than those away less than 6 months—but that the number of deployments had no significant impact. Even though women deploy less frequently than their male colleagues, they were 1.2 times more likely to have high job strain. The number and length of deployments were not associated with work stress among women in the CF (data not shown).[20] As well, regular personnel were 1.6 times more likely than reservists to be dissatisfied with their job—similar to the U.S. situation, where military job satisfaction was reported to be higher among the reserves and National Guard personnel than among those on active duty (Sanchez et al. 2004).

Conclusion

The Canadian military has faced numerous changes and challenges in recent decades. After a steady decline in the 1990s, the number of personnel has increased since 2001. In 2006, the CF comprised 64,000 full-time regular force members and 24,000 reservists. Military members are much younger than other workers. The number of women among both officers and non-commissioned members has grown since the early 1970s (Strike 1989) and their roles in the CF have expanded. Yet women accounted for only 15% of the CF (12% of regular forces) in 2002. Visible minorities were also significantly under-represented, less so among reservists.

Education and income levels of CF personnel increased over the past decade. More than half had postsecondary graduation and average earnings of regular forces personnel were higher than those of other public sector employees. Since the late 1990s, average CF pay has increased rapidly.

Although CF personnel reported solid job security and co-worker support, they experienced some issues related to psychological well-being and work stress. Compared with the overall working population, they reported higher rates of life and job dissatisfaction,

Measuring stress

To measure work stress, the CCHS employed an abbreviated version of Karasek's Job Content Questionnaire (JCQ). The CCHS measured work stress of respondents who worked at jobs or businesses in the past 12 months. Twelve items in the JCQ (for details see Park 2007) are used to measure job control, psychological demands, job insecurity, and social support at workplace. The job strain ratio was calculated by dividing the adjusted score for psychological demands by that of job control. A small constant (0.1) was added to numerator and denominator to avoid division by 0. To deal with outliers, scores were capped at 3. Respondents were classified as being in **high job strain** if the ratio was 1.2 or higher.

Respondents who strongly disagreed or disagreed with "your job security is good" were classified as having **job insecurity.** Respondents were classified as having **low social support at workplace** if they agreed or strongly agreed with being exposed to hostility or conflict from the people they work with or disagreed or strongly disagreed with supervisors' or co-workers' being helpful in getting the job done.

Additionally, respondents were asked if they were very satisfied, somewhat satisfied, not too satisfied, or not at all satisfied with their job. Those who were not too satisfied or not at all satisfied were classified as having **job dissatisfaction.**

Self-perceived work stress at the main job or business in the past 12 months was measured by asking whether most days at work were not at all stressful, not very stressful, a bit stressful, quite a bit stressful, or extremely stressful. Respondents answering quite a bit or extremely stressful were classified as having high self-perceived work stress.

job strain, major depression, and self-perceived negative mental health. This was particularly true for women, the regular forces, non-commissioned members and those who had to be away from home for longer-term deployment responsibilities.

Perspectives

■ Notes

1. The decrease in the 1990s was facilitated by the Forces Reduction Program (FRP), which offered a compensation package designed to entice members to take early release or retirement. The FRP resulted in the release of almost 14,000 members (Truscott and Dupre 1998).

2. Since the CCHS was conducted in 2002, the year of the first major wave of Canadian soldiers to Afghanistan, the sample did not include those on or returning from deployment. As well, it is unlikely that those awaiting imminent deployment would have participated in the

survey. For post-deployment health outcomes, see Zamorski and Galvin 2008 or US Department of Defense Task Force on Mental Health 2007.

3. Another component is the Special Force. According to Queen's Regulations and Orders for the Canadian Forces, (Chief of Defence Staff 2008), members of the regular forces and members of the reserve forces on active service or having applied for and been accepted for continuing full-time military service may be placed in a special force established and authorized by the Governor in Council in an emergency, or if considered desirable in consequence of any action undertaken by Canada under the *United Nations Charter*, the *North Atlantic Treaty* or any other similar instrument for collective defence.

4. In 2004, the compulsory retirement age for the CF was extended from 55 to 60.

5. Due to the increased number of recruits in recent years, in 2007 more than half of CF members had less than 10 years of service (DND 2008d).

6. This is much higher than the percentage of bilingual workers (46%) in the province of Quebec (data not shown).

7. Women's representation in the regular forces increased to 14% in 2007 (DND 2008d).

8. In 1989, a Human Rights Tribunal ordered the CF to fully integrate women into all occupations (except submarine service) by 1999. After the last barrier of submarine duty was lifted in 2001, all military occupations were open to women (Bourgon 2007; Chief Review Services 1998). Canada was the first NATO country to achieve this, although Norway, Denmark and Belgium have since followed.

9. Many allied nations including the UK still do not allow women in combat.

10. CF policy states that applicants must hold Canadian citizenship. However, a waiver may be granted by the Commander of the Canadian Forces Recruiting Group (CFRG) for exceptional cases: holders of Permanent Resident Status who possess specialized skills/qualifications the CF needs and cannot fill with a Canadian citizen and who do not pose a risk to any national interest (DND 2008f).

11. This also explains their relatively higher interest in the reserves, since the primacy of family, higher education, and professional (respectable) careers can still be pursued within the civilian sector (Jung 2007).

12. The data for public-sector employees include both full- and part-time workers.

13. Trades certificate or diploma, college diploma or certificate, university certificate, or bachelor's or post-graduate degree.

14. Strike used rates for all age groups, rather than 25 or older.

15. Many individuals join the reserves while attending university since the CF offers pay and summer jobs that may be ideal for students.

16. By 2007, 7% of women had served 25 or more years (DND 2008d).

17. This comparison is not perfect since some high-ranking non-commissioned personnel play the role of manager or supervisor.

18. The comparison with the general working population focuses on the regular forces because it is not known whether reservists refer to their military service or civilian job as the source of work stress.

19. Similarly, U.S. military personnel were reported to have higher job stress and dissatisfaction than their civilian counterparts (Pflanz and Sonnek 2002; Sanchez et al. 2004). According to a recent study, more than one-quarter of the military population studied reported significant job stress (Pflanz and Ogle 2006).

20. Similar findings were found in a U.S. study. For men, first deployments and longer deployments were associated with an increase in meeting criteria on one of the clinical scales. In contrast, women's overall primary screen rates remained relatively stable throughout the deployment, regardless of how long they were deployed or whether they had been previously deployed (Huffman et al. 2000).

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Changes in family wealth

Raj K. Chawla

The Canadian economy performed well between 1999 and 2005. Buoyed by rising incomes coupled with stable inflation and low interest rates, Canadians went on a spending spree.[1] However, much of the increased spending was financed through credit, as the personal savings rate fell from 4.0% to 1.6% and per capita debt climbed to $28,400 in 2005. Did this additional debt support increased consumption or was it invested in appreciating assets?

Using the Survey of Financial Security, this paper compares family assets and debts in 2005 with the situation in 1999. The survey collected data on 18 financial assets, ranging from the risk-free (bank accounts and term deposits, Canada Savings Bonds) to riskier investments in stocks and mutual funds—whether tax-sheltered like RRSPs or not.[2]

Families are divided into seven cohorts, based on the year of birth of the major income recipient (MIR), ranging from those in their 20s in 2005 to those 80 and over (see *Data source and definitions*). These cohorts are matched back to major income recipients from the same birth cohorts surveyed in 1999. For example, those aged 22 to 30 in 2005 correspond with 16- to 24-year-olds in 1999. These seven groups are not true cohorts since they consist of 'similar' individuals at two points in time. Nevertheless, they provide an intuitive look at the accumulation of assets and debts across the life cycle.[3]

The groups together paint a portrait of the typical family as it passes along the life course: finishing their education and leaving the parental home (20s); launching their careers and starting new families (30s); amassing assets and raising the next generation (40s); paying off major debts and beginning retirement planning (50s); winding down careers and easing into retirement (60s); downsizing and drawing on savings (70s); and, finally, managing assets as the end of life approaches (80s).

Chart A The proportion of debtors increases early in the life cycle but declines steadily later

Year of birth of major income recipient

Year of birth of major income recipient
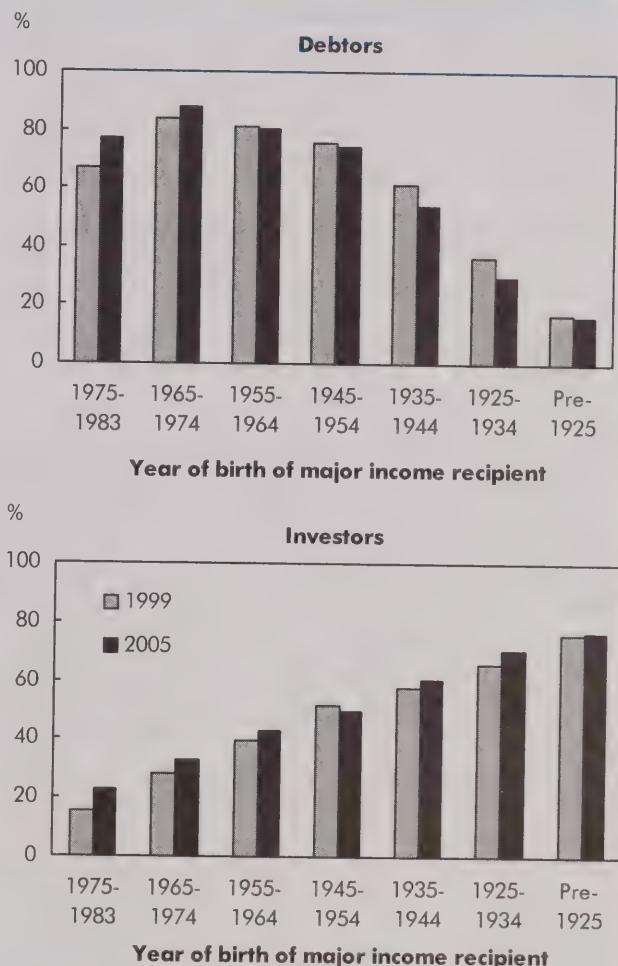
Source: Statistics Canada, Survey of Financial Security, 1999 and 2005.

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Data source and definitions

The analysis is based on the **Survey of Financial Security** (SFS) for the years 1999 and 2005. The survey collected information on family demographics, assets and debts at the time of the survey, and income during the preceding calendar year. It covered private households in the 10 provinces. Excluded were persons living on Indian reserves, members of the armed forces, and those living in institutions such as prisons, hospitals, and homes for seniors.

Each year used a regular area sample supplemented by a small sample of 'high income' households in order to improve wealth estimates at the upper end of the income distribution. Financial data were sought from the family member most knowledgeable about the family's finances. Although the sample size of the 2005 SFS was about one-third of that in 1999, the surveys were otherwise identical. This simplifies not only the comparability of wealth by components, but also measurements of change over time. Nonetheless, two adjustments were made to the 1999 data: first, the sample was re-weighted following the procedure used for the 2005 sample, and second, all money data were converted to 2005 dollars in order to remove the effect of inflation—acknowledging that it may not have affected all assets uniformly. The analysis is based on a sample of 15,933 families in 1999 and 5,103 in 2005.

Family refers to economic families and unattached individuals. An economic family is a group of persons sharing a common dwelling and related by blood, marriage, common law or adoption. An unattached individual lives alone or with unrelated persons.

The **major income recipient** is the family member with the highest income before tax. If two persons had exactly the same income, the older one was selected.

Pre-tax family income is the sum from all sources during the calendar year received by family members aged 16 and over. Sources include wages and salaries, net income from self-employment, investments, government transfers, pensions, scholarships and alimony. Excluded are income in kind, tax refunds, and inheritances.

Government transfers include all direct payments from federal, provincial and municipal governments to individuals or families. These include Child Tax Benefits, Employment Insurance, Canada/Quebec Pension Plan benefits, Old Age Security, Guaranteed Income Supplement, Spousal Allowance, Goods and Services Tax credit, workers' compensation, social assistance, provincial tax credits, and training allowances.

Financial assets consist of liquid and non-liquid assets. Liquid assets include deposits held in chequing and savings accounts, term deposits, guaranteed investment certificates, Canada Savings Bonds (including accrued interest), and other bonds. Non-liquid assets comprise registered retirement savings, registered education savings, registered retirement income funds, deferred profit sharing plans, treasury bills, stocks, mutual funds, mortgages owned, loans to others, annuities, trust funds, and other miscellaneous financial assets.

Non-financial assets are the market value of the owner-occupied home, other real estate, market value of owned vehicles (including recreational), value of the contents of a residence, other valuables and collectibles, and other non-financial assets.

Business equity is the market value of business assets less the book value of debt outstanding.

Savings in employer pension plans at the family level are the sum of accrued savings that can be claimed by members covered under such plans on termination of their job. Among retirees, these reflect their current entitlement. In both surveys, such pension savings were estimated on the basis of information collected on the type of plan, yearly contribution, and the number of years contributed, etc.[7] Unlike conventional assets like a home or business, savings in such plans are not transferable except to a surviving spouse.

Total debt comprises any mortgage on an owner-occupied home or other real estate and all non-mortgage debt; the latter includes amounts owing on credit cards, secured and unsecured loans (including lines of credit from banks and other institutions), car loans, and other unpaid bills.

Wealth is total assets less total debt. It is based on marketable assets (with the exception of savings in employer pension plans) that are in direct control of families. It does not include future claims on publicly funded income security programs or any potential returns on human capital (like employment income or the ability to generate investment income).

To keep tables to a manageable size, wealth was examined in terms of eight components: savings in employer pension plan, business equity, home equity, equity in other real estate, and equity in vehicles, value of contents of residence, other non-financial assets, and net financial assets (total financial assets less total non-mortgage debt).

Mean wealth is aggregate wealth divided by the total number of families, whereas **median wealth** is the value at which half the families have lower values and half have higher values. The mean value is affected by extreme values whereas the median is not.

The **Gini coefficient** is a measure of inequality in a distribution. It lies between zero (no inequality) and one (total inequality)—the closer it is to 1.0, the greater the inequality in the distribution.

A family is treated as a **debtor** if it owes any money on a mortgage or other debt, and as an **investor** if it has non-zero investment income for the reference year. Investment income includes interest earned on deposits and bonds, dividends from stocks or mutual funds, and net rental income.

It is important to remember that this approach approximates how the assets and debts of a demographic cohort progessed over 6 years, as opposed to comparing groups of the same age at different points in time.

Although the primary focus of the cohort analysis is the accumulation of wealth, it was the sharp increase in debt from 1999 to 2005 that motivated this study. Thus it begins with a look at the ebb and flow of debt across the life cycle (see *Family cohorts*).

Debt mounts until about age 40, then declines

The rate of indebtedness is largely a function of life-cycle stage. Young families typically start with low incomes and high expenses related to establishing a home and raising children. The imbalance is resolved by home mortgages and other forms of credit. As incomes increase over time and financial needs drop, families not only pay down their debt but also begin to invest. Indebtedness peaks at over 80% by the time the MIR is 40 and then slides below 20% after retirement (Chart A). On the other hand, the proportion of families with investment income increases steadily, from 15% for the youngest group in 1999 to 77% for the oldest in 2005.[4]

Although life-cycle patterns explain much of the asset and debt picture, economic trends are also important. Historically low interest rates at the beginning of the 2000s facilitated borrowing—the overall debt-to-income ratio jumped from 1.02 in 1999 to 1.21 in 2005—as average debt jumped by almost a third, from $62,700 to $82,500, while average family income increased only about 10%, from $61,600 to $68,100 (Chart B). Only families with a major income recipient in their 70s reduced their average debt load. Most of the new debt went into the booming housing market, fuelled by low interest rates, low down payment options and a strong labour market. Still, other types of debt grew in lock-step so that the overall distribution changed little.

Even though more families were indebted and carrying larger financial liabilities in 2005, they were still wealthier—mean wealth holdings rose from $281,000 in 1999 to $380,700. Half of this additional wealth was non-financial— home equity, vehicles, other real estate, home contents, and valuables and collectibles. The other half consisted of savings in employer pension plans, business equity and net financial assets.

Families in their 20s

Families in the youngest cohort represented 6% of all families in 1999 (Table 1). Families in this (and

Chart B   The debt-to-income ratio declines steadily after age 40

Ratio (mean debt/mean income)

Year of birth of major income recipient
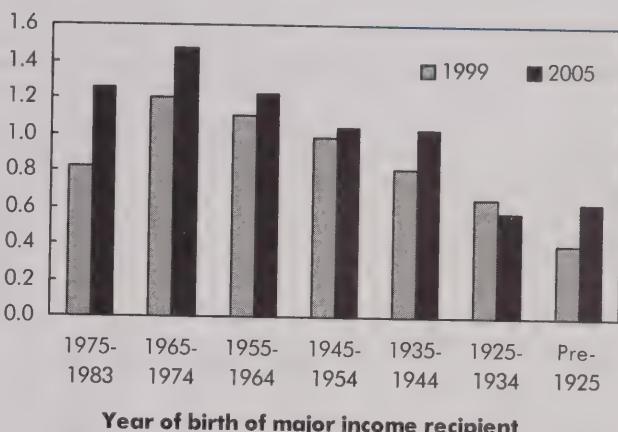
Source: Statistics Canada, Survey of Financial Security, 1999 and 2005.

Family cohorts

To study changes in family wealth over time, the ideal source would be longitudinal. However, using surveys conducted at different times allows the creation of groups of families (cohorts) sharing a common characteristic. The usual classifying characteristic is the age of a person—in this study, the major income recipient at the time of the 1999 survey. While other characteristics such as the type of family, area of residence, or income may change over time and contaminate the concept of a cohort, a person's age is least volatile and easy to use.

To avoid the problem of a family of two or more changing over time into two or more unattached individuals or vice versa, families and unattached individuals are used collectively as a unit of analysis. Given the range of age groups, the major income recipient may have changed, especially if one spouse retired and the other continued to work. Families with a major income recipient who was under 22 or who immigrated to Canada after 1999 were excluded from the 2005 data (accounting for 5.2% of families and 1% of the total wealth).[8] No adjustment was made for emigrants who left after July 1999, or for those who may have been temporarily away between 1999 and April 2005.

Cohorts were created as follows:

Year of birth	Age of major income recipient at time of survey		In text, families are referred to as in their
	1999	2005	
1975 to 1983 (Cohort 1)	16 to 24	22 to 30	20s
1965 to 1974 (Cohort 2)	25 to 34	31 to 40	30s
1955 to 1964 (Cohort 3)	35 to 44	41 to 50	40s
1945 to 1954 (Cohort 4)	45 to 54	51 to 60	50s
1935 to 1944 (Cohort 5)	55 to 64	61 to 70	60s
1925 to 1934 (Cohort 6)	65 to 74	71 to 80	70s
Pre - 1925 (Cohort 7)	75 plus	81 plus	80s

Table 1 Pre-tax income and wealth of families by cohort

Year of birth of major income recipient	Families	Total wealth	Mean income	Median income	Mean wealth	Median wealth	Change in mean wealth	Change in mean wealth due to:	
								Families with assets or debts	Value of assets or debts
		%			2005 $			%	
1999	**100.0**	**100.0**	**55,600**	**43,700**	**281,000**	**120,500**	**99,800**	**7.9**	**92.1**
1975 to 1983	5.6	0.5	21,300	14,000	25,100	1,800	24,600	95.7	4.3
1965 to 1974	18.6	6.3	49,400	42,800	94,600	32,800	85,500	34.0	66.0
1955 to 1964	24.5	18.4	63,600	55,000	210,800	106,900	246,000	10.2	89.8
1945 to 1954	19.5	26.0	72,500	59,100	373,600	209,100	196,300	-0.7	100.7
1935 to 1944	12.9	23.6	59,400	46,200	514,600	305,900	67,300	-37.6	137.6
1925 to 1934	10.9	16.0	44,000	35,500	414,500	291,700	69,700	1.0	99.0
Pre-1925	8.0	9.3	38,300	26,500	323,800	188,500	65,700	26.3	73.7
2005	**100.0**	**100.0**	**61,000**	**46,600**	**380,700**	**163,200**	...	...	...
1975 to 1983	15.7	2.0	40,300	32,700	49,600	13,000	...	...	...
1965 to 1974	17.7	8.4	67,100	57,000	180,100	91,500	...	...	...
1955 to 1964	22.8	27.4	79,200	65,400	456,800	221,500	...	...	...
1945 to 1954	18.7	28.0	70,500	58,100	569,900	330,700	...	...	...
1935 to 1944	12.7	19.5	51,700	41,100	581,900	377,700	...	...	...
1925 to 1934	8.5	10.8	42,100	33,100	484,200	332,400	...	...	...
Pre-1925	3.8	3.9	35,000	26,900	389,500	237,200	...	...	...

Source: Statistics Canada, Survey of Financial Security, 1999 and 2005.

the next) cohort are at the stage of family formation and expansion, home purchase, and asset building. 'Family' is used in the broad sense, since as many MIRs remained single as were married by 2005. Not surprisingly, because accumulation takes time, young families have the lowest holdings of financial assets. By 2005, they had raised their share of total wealth from 0.5% to 2.0%. Their mean holdings nearly doubled (from $25,100 to $49,600), almost entirely due to changes in the rates of asset ownership and debts owed. About half of this cohort's wealth gain came from home equity and contents and savings in an employer pension plan; another third came from net financial assets. For instance, 26% owned a home in 2005 compared with just 8% in 1999, while the respective proportions in mortgaged homes were 95% and 76%. Even this early in their careers, 42% had RRSPs and 33% had employer pension plans in 2005 compared with 21% and 13%, respectively, in 1999. On the other hand, seven in ten had outstanding loans (education, vehicle or other) or credit card balances owing.

The composition of total financial assets changed the most (44 percentage points) for these young families. From having 55% of their assets in bank accounts and term deposits and 17% in RRSPs in 1999, they had switched to 50% in RRSPs and just 22% in accounts and term deposits by 2005.

Families in their 30s

This cohort represented 19% of all families in 1999. Even though these families took on more additional debt (41%) than any other cohort, their mean wealth almost doubled—from $94,600 to $180,100. One-half of this increase came from home equity alone, followed by increases of 15% in employer pension plans and 12% in net financial assets. These three components accounted for nearly 80% of the increase in this cohort's wealth.

By this stage, the majority were two-spouse families with children. More of them had a home with a mortgage, raising their rate of homeownership from 41% to 62%. And, to provide for their children's postsecondary education, the proportion with RESPs jumped

from 7% to 21%, compared with much smaller in-creases for savings in an employer pension plan (from 38% to 49%) or an RRSP (from 57% to 63%) (Table 2).

Despite the substantial gains for this cohort, their share of total wealth increased only modestly—from 6% to 8%.

Families in their 40s

This cohort consisted of the latter half of the baby boomers. They were in their peak income years and represented 25% of all families in 1999. Even though they took 29% of the additional household credit, they improved their share of total wealth from 18% in 1999 to 27% by 2005—the largest gain in wealth share of any cohort.

A little over half of these families were couples with children and/or other relatives and another one-fifth were unattached individuals. Not only did the inci-dence of homeownership among families in this cohort rise between 1999 and 2005 (from 63% to 74%), their holdings of other real estate also increased (from 15% to 21%). In fact, they had the highest change in the rate of ownership of other real estate. Although the proportion with RRSPs remained unchanged (65%), the proportion with RESPs more than dou-bled—from 10% to 22%. And their employer pen-sion plan participation rose from 47% to 52%.

These late boomers had the largest increase in wealth, more than doubling their holdings from $210,800 in 1999 to $456,800 by 2005. Equity in a family home and other real estate accounted for almost one-half of this gain and business equity for another one-fifth. The remainder came from employer pension plans and net financial assets (Table 3).

Families in their 50s

The older baby boomers, within sight of retirement, accounted for 20% of all families in 1999. Their share of total wealth increased modestly—from 26% in 1999 to 28% in 2005—all because of the amounts of assets and debts. Since many in this cohort had become 'empty-nesters'—the proportion of two-spouse families with children dropped from 30% to 10%—they likely had more money to invest or pay off debts.[5] Homeownership rose marginally from 71.1% to 75.9% as did the proportions of those with RRSPs (from 66.8% to 69.2%) or employer pension plans (from 53% to 56%).

These early boomers increased their wealth holdings by $196,300, bringing the amount to $569,900 in 2005. Accrued savings in employer pension plans alone accounted for 43% of the gain, followed by 41% for equity in home or business. Net financial assets accounted for a meagre 9% of the gain.

Families in their 60s

Families in this cohort were transitioning into retire-ment. In 1999, more than half of them (55%) had employment earnings as the major source of income compared with less than one-third (32%) in 2005. Overall, they represented 13% of families in 1999, comprising largely couples and unattached individu-als. Their share of wealth fell from 24% in 1999 to 20% by 2005—not because their wealth declined, but because the wealth of other cohorts increased more.

Three-quarters of these families lived in an owned home and a little over half had savings in employer pension plans. Not too surprisingly, the proportion holding RRSPs fell by 11 percentage points (from 66% to 55%), counterbalanced by a similar increase in the proportion holding RRIFs (in 2005, it was still man-datory to convert funds held in RRSPs into RRIFs by age 69). Also, the proportion owning a business fell from 21% to 13% and other real estate from 26% to 21%. Apparently some families reaching their 60s opted to wrap up or sell their business or investment properties (if not transferred to the next generation) and convert the proceeds into financial or other assets.

As might be expected, these families had the highest mean wealth—$581,900 in 2005 compared with $514,600 in 1999. An increase in home equity alone accounted for 59% of this gain, followed by 30% for employer pension plans and 29% for net financial as-sets. As business ownership dropped, so did the con-tribution of business equity.

Families in their 70s

These elderly unattached individuals and couples con-stituted 11% of all families in 1999. They were mostly retired, with government transfers and retirement income as their major sources of income (see *Families dependent on government transfers*). Between 1999 and 2005, their share of total wealth fell from 16% to 11% as their numbers dropped because of deaths and they began to use their savings to fund consumption. The proportions owning real estate, a business, vehicles, or RRSPs fell, whereas the proportions holding RRIFs or

Table 2   Families owning selected assets and owing debts

	1975-1983	1965-1974	1955-1964	1945-1954	1935-1944	1925-1934	Pre-1925	Total
				Year of birth of major income recipient				
1999				%				
Assets								
Home	7.8	41.0	62.5	71.1	74.4	71.7	61.6	59.6
Other real estate	4.6	8.6	14.9	22.5	25.5	19.3	12.2	16.3
Business	3.3	16.7	24.8	27.7	21.4	8.9	4.0	18.8
Vehicle	45.8	74.0	81.5	83.3	82.8	78.2	59.8	76.5
Employer pension plan	12.9	37.6	47.1	52.5	54.3	55.2	44.0	46.0
Canada Savings Bonds	7.7	9.2	14.3	14.1	16.3	14.8	19.8	13.7
Stocks or mutual funds	8.7	19.9	20.9	24.4	26.4	20.8	15.9	21.0
Registered education savings plan	1.8	6.7	10.2	7.3	2.0	0.6	0.3	5.6
Registered retirement savings plan	21.3	57.4	65.2	66.8	65.5	33.9	5.3	53.4
Registered retirement income fund	0.0	F	F	F	5.2	33.6	25.7	6.5
Debts								
Mortgage on home	5.9	37.4	49.3	42.2	24.3	9.4	3.0	32.0
Line of credit	5.6	17.2	20.9	20.6	14.7	6.1	2.1	15.4
Credit cards	27.8	43.6	41.0	36.3	27.8	16.3	7.4	32.7
Vehicle loan	18.3	28.8	25.8	23.8	17.2	9.4	2.7	20.8
Student loan	29.8	22.5	9.6	13.6	5.2	1.8	F	11.7
Mortgage debt (overall)	7.0	39.3	52.0	45.4	27.5	10.9	3.2	34.3
Non-mortgage debt	65.4	77.6	70.9	66.0	54.5	32.3	14.6	60.1
Total debt	66.7	83.7	81.1	75.9	61.7	36.3	17.1	67.3
2005								
Assets								
Home	25.8	62.2	73.9	75.9	73.4	72.0	61.0	63.9
Other real estate	6.3	12.4	20.5	20.9	21.2	16.4	11.3	16.3
Business	9.0	19.8	23.4	23.0	12.8	6.0	2.9	16.8
Vehicle	63.9	81.6	80.4	83.7	79.1	71.1	56.4	76.8
Employer pension plan	32.7	48.5	51.5	55.7	56.2	62.2	57.3	50.5
Canada Savings Bonds	8.7	9.6	11.7	11.8	8.8	12.1	12.9	10.6
Stocks or mutual funds	11.2	18.8	22.4	19.6	22.3	20.5	19.2	19.2
Registered education savings plan	4.6	20.9	22.3	8.1	2.2	1.3	F	11.4
Registered retirement savings plan	42.1	62.6	65.6	69.2	54.5	6.4	F	53.2
Registered retirement income fund	F	F	1.1	2.4	15.5	51.6	27.8	8.3
Debts								
Mortgage on home	24.6	55.9	50.0	35.2	18.3	6.0	F	34.8
Line of credit	20.5	31.6	35.0	26.8	22.3	8.5	F	25.5
Credit cards	40.2	45.4	40.5	37.2	23.9	12.2	5.4	34.8
Vehicle loan	29.3	30.3	33.2	31.6	17.3	9.8	F	26.6
Student loan	32.2	16.4	8.7	6.9	1.5	F	F	11.5
Mortgage debt (overall)	27.0	57.0	53.1	39.3	20.9	6.4	3.7	37.2
Non-mortgage debt	72.9	77.5	72.3	67.2	48.7	27.1	13.7	63.3
Total debt	76.8	87.8	80.6	74.1	54.1	29.9	16.1	69.9

Source: Statistics Canada, Survey of Financial Security, 1999 and 2005.

Table 3 Decomposition of growth in mean wealth and composition of wealth of families

	1975-1983	1965-1974	1955-1964	1945-1954	1935-1944	1925-1934	Pre-1925	Total
				Year of birth of major income recipient				
				$				
Change in mean wealth	**24,600**	**85,500**	**246,000**	**196,300**	**67,300**	**69,700**	**65,700**	**99,800**
Decomposition				%				
by component	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Employer pension plan	15.4	15.3	15.4	43.2	30.2	21.3	53.5	26.3
Business	4.5	5.9	19.3	17.6	-14.8	-13.5	-10.9	13.9
Home	20.9	51.4	26.9	23.8	58.6	57.1	53.2	34.5
Other real estate	1.6	5.9	20.4	5.3	-4.8	12.2	9.5	13.7
Vehicle	6.4	3.3	0.7	1.0	0.5	-3.5	-1.9	0.8
Contents of residence	15.8	6.7	1.2	-0.2	-2.6	0.8	-2.8	0.8
Other non-financial assets	0.8	-0.5	0.2	0.0	3.6	1.0	-2.3	0.1
Net financial assets	34.6	12.1	16.0	9.4	29.3	24.7	1.6	9.9
Composition of wealth								
1999	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Employer pension plan	1.0	7.2	12.6	18.4	27.1	25.8	19.3	19.9
Business	5.0	21.3	18.2	13.6	9.1	4.8	3.7	11.5
Home	42.3	25.6	29.1	26.2	23.2	26.6	29.4	26.4
Other real estate	14.6	6.9	5.4	6.9	6.7	5.1	4.2	6.1
Vehicle	11.6	6.0	4.2	3.0	2.6	2.6	1.8	3.2
Contents of residence	19.4	13.8	8.9	5.9	4.2	4.0	4.4	6.2
Other non-financial assets	4.1	2.7	2.1	1.2	1.1	0.7	0.9	1.4
Net financial assets	2.1	16.6	19.4	24.7	26.1	30.4	36.4	25.4
2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Employer pension plan	8.1	11.0	14.1	27.0	27.4	25.2	25.1	21.5
Business	4.7	14.0	18.8	15.0	6.3	2.1	1.2	12.1
Home	31.7	37.8	27.9	25.3	27.3	31.0	33.4	28.5
Other real estate	8.2	6.4	13.4	6.4	5.4	6.1	5.1	8.1
Vehicle	9.0	4.7	2.3	2.3	2.3	1.7	1.2	2.5
Contents of residence	17.6	10.4	4.7	3.8	3.4	3.5	3.2	4.8
Other non-financial assets	2.5	1.2	1.1	0.8	1.4	0.8	0.3	1.0
Net financial assets	18.2	14.5	17.6	19.4	26.5	29.6	30.5	21.4

Source: Statistics Canada, Survey of Financial Security, 1999 and 2005.

employer pension plans rose.[6] Between 1999 and 2005, these families increased their mean wealth by only $69,700 (to $484,200) with 57% coming from home equity alone, 25% from financial assets and 21% from employer pension plans.

Since mortality is a significant factor in the number and size of families in their 70s and 80s, it is important to note that the population in these cohorts is becoming less comparable at the beginning and end of the period. Therefore, the increases in wealth observed towards the end of the life course in these artificial cohorts may be due to unequal probabilities of death across the wealth distribution. True longitudinal data

would be required to determine whether wealth typically increases or declines towards the end of the life course.

Families in their 80s

In this age cohort, unattached individuals outnumbered couples. They dropped from 8% of all families in 1999 to only 4% by 2005. Not surprisingly then, their share of total wealth fell from 9% to 4%. The proportion of homeowners remained unchanged at 61%, but the proportion of those with an employer pension plan rose from 44% to 57% (this apparent anomaly may arise because an elderly major income recipient is liv-

Changes in wealth distribution

Families in their 20s, 30s and 40s took most of the household credit between 1999 and 2005 and also experienced major shifts in their wealth distributions. For example, the proportion of families in their 20s with a net worth of less than $10,000 dropped from 70% to 45%, whereas the proportion worth between $50,000 and $249,999 jumped from 7% to 24% as these families increased their financial assets or bought a home. Overall, the distribution of wealth shifted by 26 percentage points for families in their 20s, 24 points for those in their 30s and 23 points for the 40s cohort. The shift was minimal (7 points) for families in their 60s. For instance, 14% had a net worth of one million dollars or more in 1999 compared with 15% in 2005. On the other hand, relatively more baby boomer families in their 50s and 40s increased their wealth to one million dollars or more (see *Millionaire families* for more details).

Overall, the distribution of wealth shifted by 8 percentage points—all at the upper end of the distribution—as families increased their wealth. However, the shape of the curve remained unchanged as median wealth stayed at 43% of the mean, and inequality measured by the Gini coefficient remained at 0.678. Statistically, the situation was not much different by cohort with the exception of families in their 20s and 30s whose wealth was slightly more equally distributed in 2005 than in 1999 as more of them owned a home. Median wealth rose from 7% to 26% of the mean for those in their 20s and from 35% to 51% for the 30s cohort—indicating reduced skewness in their wealth distributions.

Distribution of families by wealth

	Year of birth of major income recipient							
	1975-1983	1965-1974	1955-1964	1945-1954	1935-1944	1925-1934	Pre-1925	Total
	%							
1999	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $10,000	70.3	32.3	17.5	11.9	11.6	9.7	9.2	19.8
$10,000 to $29,999	15.1	15.8	8.9	5.9	4.9	4.1	6.4	8.7
$30,000 to $49,999	5.6	10.4	6.5	4.1	2.9	3.8	4.3	5.8
$50,000 to $99,999	4.3	17.3	15.4	10.8	7.6	8.4	11.7	12.2
$100,000 to $249,999	2.9	16.0	28.7	22.6	16.9	18.6	29.2	21.1
$250,000 to $499,999	0.5	5.8	14.3	23.1	19.8	27.6	21.5	16.4
$500,000 to $999,999	0.7	1.6	6.7	15.1	22.2	19.3	11.7	10.8
$1,000,000 or more	0.5	0.8	2.1	6.4	14.0	8.7	6.1	5.2
Median/mean wealth ratio	7.3	34.7	50.7	56.0	59.4	70.4	58.2	42.9
Gini coefficient of wealth	...[1]	0.755	0.656	0.615	0.586	0.537	0.586	0.678
2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under $10,000	45.1	20.9	12.3	10.5	9.7	6.0	7.6	17.6
$10,000 to $29,999	18.1	10.6	5.8	5.5	2.4	6.5	9.9	8.3
$30,000 to $49,999	9.4	5.2	4.1	2.3	2.3	2.3	3.8	4.4
$50,000 to $99,999	13.7	15.5	10.2	6.1	6.2	6.8	9.1	10.1
$100,000 to $249,999	10.3	25.4	21.3	17.7	19.2	20.6	20.1	19.2
$250,000 to $499,999	2.5	14.9	23.7	19.9	20.4	21.7	23.4	17.5
$500,000 to $999,999	0.5	5.7	13.8	22.1	25.0	23.5	17.4	14.2
$1,000,000 or more	0.4	1.7	8.8	15.8	14.9	12.6	8.7	8.6
Median/mean wealth ratio	26.2	50.8	48.5	58.0	64.9	68.6	60.9	42.9
Gini coefficient of wealth	0.840	0.655	0.667	0.602	0.568	0.531	0.576	0.678

1. Since many families had a negative wealth, the coefficient turned out to be greater than 1.0 and is not shown here.
Source: Statistics Canada, Survey of Financial Security, 1999 and 2005.

ing with a younger spouse or other relative). Between 1999 and 2005, mean wealth for these families increased from $323,800 to $389,500. Similar increases in employer pension plans and home equity accounted for most of the gain.

Conclusion

Between 1999 and 2005, Canadian families took on $215 billion of additional debt while increasing their wealth by $1,386 billion. Most of this additional wealth

Millionaire families

The proportion of families with a net worth of one million dollars or more rose from 5% in 1999 to 9% in 2005. Almost all of the increase was concentrated among the baby boomers—for those in their 50s, the proportion jumped from 6% to 16%; for those in their 40s, from 2% to 9%. One in three millionaires were baby boomers in 1999 compared with about 6 in 10 by 2005. Among the oldest cohort, the proportion fell from 9% to 4% as a result of deaths, business wind-ups, home downsizing, or use of financial assets. The median age of the major income recipient in millionaire families fell from 58.2 to 56.9, but increased from 43.7 to 46.4 among non-millionaires.

On average, millionaire families held 10 times more wealth than non-millionaires ($1.9 million versus $190,000 in 1999 and $2.1 million versus $222,000 in 2005). While non-millionaires derived most of their wealth from home equity and an employer pension plan, millionaires' wealth came mostly from net financial assets, followed by business and home equity. The mean pre-tax income of millionaires, on the other hand, was only 2.5 times that of non-millionaires—$135,000 versus a little over $50,000. Despite their higher incomes, the proportion of millionaires carrying debt increased from 51% in 1999 to 58% in 2005, while non-millionaires with debt inched up from 68% to 71%.

Wealth was more equally distributed than income for millionaires, but the reverse for non-millionaires.

Gini coefficients for income and wealth

	1999	2005
Income		
Millionaire families	0.425	0.413
Other families	0.407	0.399
Wealth		
Millionaire families	0.324	0.339
Non-millionaires	0.602	0.583

consisted of non-financial assets like a home, other real estate, vehicles and contents of a residence, and the actuarial value of employer pension plans. Since most of the additional debt was in mortgages, many families may have acquired assets using leverage.

Not all cohorts of families gained equally (see *Changes in wealth distribution*). Nearly half of the additional household wealth from 1999 to 2005 was accumulated by baby boomers in their 40s and almost another third by those in their 50s. The gain for the former consisted of increased equity in a home, other real estate, or a business, and financial assets, whereas for the latter it came from home equity and employer pension plans. Families in their 20s and 30s improved their net worth by way of homeownership and other financial assets.

A home remained a major asset for Canadian families and its equity the largest component of wealth for most. In fact, by 2005, home equity and employer pension plans constituted over one-half of total wealth for families in their 50s, 60s, 70s or 80s. Rising real estate values pushed up home equity, and the appreciation in home value, as a proportion of home equity increased in importance for older owners.

RRSPs remained the major financial asset for families from their 20s to their 60s and RRIFs for those in their 70s and 80s. Although more families in their 30s and 40s with children contributed to RESPs, amounts paled in comparison with RRSP holdings. On the other hand, the proportions of families investing in riskier assets like stocks and mutual funds outside of registered plans dropped for most cohorts between 1999 and 2005, as did the amounts in these holdings.

Families dependent on government transfers

In both 1999 and 2005, about one million families drew their entire pre-tax income from government transfers. Compared with families receiving no transfers, these families were much older—the median age of the major income recipient was 49.9 in 1999 and 54.2 in 2005. Their mean income was only about $12,000 compared with $100,000 for other families. Because of their lower income coupled with age, less than 40% owed money compared with over 80% of those without transfers.

Even though their mean wealth rose from $35,000 to $57,000, it was still only about 10% of the level for those without transfers. Since one-fifth to one-fourth of transfer-dependent families owned their home, this equity plus the value of the contents of residence constituted around 60% of their wealth compared with 30% for those with no transfers. Transfer-dependent families also had relatively more equity in other real estate and very little in the way of net financial assets or employer pension plans.[9]

In both years, wealth was much more unequally distributed among transfer-dependent families. Part of this may be attributed to the low proportion of homeowners in this group.

Overall, neither the shape of the wealth distribution nor inequality changed between 1999 and 2005. Nonetheless, general economic prosperity and rising real estate values resulted in 461,000 more families worth one million dollars or more—bringing the total to 1.1 million by 2005. On the other hand, 134,000 fewer families were totally dependent on government transfers.

Perspectives

■ Notes

1. Between 1999 and 2005, per capita income of Canadians rose from $32,300 to $42,600 (or 31.9%) whereas the rate of inflation, measured by the change in the all-items Consumer Price Index, varied between 1.8% and 2.8%, unemployment rate between 6.8% and 7.7%, and the trend-setting bank rate, that determines interest rates charged on a variety of personal loans including mortgages, between 2.50% and 5.77%.

2. Compared with the National Balance Sheet Accounts of the personal sector, a household survey collecting data on assets and debts usually provides underestimates of financial assets and slight overestimates of non-financial assets resulting in fairly comparable estimates of wealth. Under-reporting in a survey is primarily due to the poor recall capability and/or refusal of respondents. All of the missing data on components used to compile estimates of wealth are imputed.

3. A similar approach was used in an earlier study on wealth (Chawla and Pold 2003).

4. The current analysis is restricted to families by cohort based strictly on the age of the major income recipient rather than classifying families further into debtors and investors. Since the latter two concepts are much more volatile as families within a cohort may change status from debtor to investor and vice-versa, any further discussion based on these concepts is beyond the scope of this paper.

5. All other things being equal, the monetary needs of a family drop when children leave home, and consequently, that family has the opportunity to improve its wealth situation by using the spare funds to acquire more assets and/or pay off any outstanding debts. On the other hand, if the departure of children encouraged that family to change its lifestyle and tastes and spend more on goods and services, then the situation would be different.

6. An increase in the proportion holding savings in employer pension plans in this cohort may be attributed to a situation where an elderly major income recipient is likely living with a younger spouse and/or other family members. Data are analyzed at the family level. Different mortality rates between those with and without employer pension income may also be a factor.

7. A detailed description of the methodology used to estimate savings in employer pension plans can be found in *Survey of Financial Security – Methodology for estimating the value of employer pension plan benefits* (Cohen, Frenken and Maser 2001).This paper and the SFS questionnaires are available on the Statistics Canada website (www.statcan.ca).

8. In 1999, there were 12,216,000 family units with a total wealth of $3,432 billion. By 2005, there were 13,348,000 families with a wealth of $4,862 billion. Excluding 694,000 families with a major income recipient under 22 or who immigrated to Canada after 1999, there were 12,654,000 families remaining for the analysis. The difference of 438,000 families between 2005 and 1999 can be attributed to the re-weighting of the 1999 sample as well as to the dissolution of two-spouse families into lone-parents and unattached individuals and formation of new two-spouse units since some unattached individuals married by 2005.

9. Transfer-dependent families, who were mostly renters, may have acquired real estate other than a home when their incomes were higher. Although incomes of families change as they dissolve or members become unemployed, withdraw, or retire from the labour market, some may have kept their assets intact. Income pertains to a given calendar year, whereas when an asset was purchased is not known.

■ References

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In the works

Some of the topics in upcoming issues

■ **Wages of older workers**

With the aging of the baby-boomers, age-earnings profiles will be of even more importance in forecasting future pension benefits payout.

■ **Employment in the trades**

An analysis of employment trends in selected trade occupations using socioeconomic and job characteristics.

■ **Job quality**

An examination of recent contrary employment trends in "well-paid" manufacturing and "low-paid" retail trade.

■ **Immigrants: Still settling for less?**

Despite their higher education level, immigrants continue to be over-represented in low-skilled jobs and to have lower earnings than Canadian-born workers.

■ **Time-crunched families**

A profile of time-crunched families in the context of the increased labour market participation of women with children and the rising proportion of dual-earner families.

■ **Employer top-ups**

A look at the trends in the proportion of mothers with a paid job who receive a top-up from their employer after birth, as well as their socio-demographic and job characteristics.

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What's new?

Recent reports and studies

■ From Statistics Canada

■ *Activity limitations and employment*

Labour market performance was strong for people with activity limitations between 2001 and 2006, resulting in reduced gaps with Canadians without such limitations, in employment, labour force participation and unemployment.

People with activity limitations posted strong growth in their employment rate, from 49.3% in 2001 to 53.5% in 2006, narrowing the gap with the population without activity limitations (75.1% in 2006).

Labour force participation for people with activity limitations rose from 56.9% in 2001 to 59.6% in 2006, again reducing the gap with people without activity limitations.

The unemployment rate for people with activity limitations dropped from 13.2% in 2001 to 10.4% in 2006, narrowing the gap by roughly one-third with those without activity limitations.

People with severe or very severe activity limitations experienced solid growth in the employment rate between 2001 and 2006, from 31.8% to 38.3%.

For more information, see the July 24, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Relative productivity levels in Canada and the U.S.*

Labour productivity was lower in Canada than in the United States during the late 1990s and early 2000s, largely because of differences in multifactor productivity. From 1994 to 2003, the aggregate level of labour productivity in Canada not only lagged that of the United States, but the gap also widened in the early 2000s.

In 1994, the aggregate level of labour productivity in Canada was about 89% of the US level. By 2003, it had edged down to 87%.

Labour productivity is defined as real gross domestic product per hour worked. Differences in labour productivity can be attributed to differences in either capital intensity or multifactor productivity. The relative levels of multifactor productivity measure the difference in the overall efficiency of an economy that arises from more efficient production techniques, technology, firm innovation, firm organization, and firm scale.

Lower labour productivity in Canada over this period was due to the lower levels of multifactor productivity. Capital intensity was higher in Canada than in the United States over the same period.

For more information, see the July 21, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Labour productivity*

In the first quarter of 2008, the labour productivity of Canadian businesses declined for a second consecutive quarter due to inclement weather, reduced working hours, and a widespread drop in manufacturing output, especially in the motor vehicle industry.

Productivity of Canadian businesses edged down 0.3% in the first quarter of 2008, slowing from the 0.7% decline in the fourth quarter of 2007. The back-to-back declines followed four quarters of growth.

After reaching a plateau in the final quarter of 2007, gross domestic product experienced its first quarterly decline in nearly five years in the first quarter of 2008.

At the same time, employment continued to expand, despite job losses in manufacturing. Total hours worked remained almost unchanged, however, as the sustained growth in employment was completely offset by a drop in average hours worked per job.

For more information, see the June 13, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *2006 Census: Shelter costs*

In 2006, Canada's homeownership rate reached its highest level since 1971. At the same time, the proportion of households spending 30% or more of their incomes on shelter increased slightly. Most of this increase was for homeowners with mortgages as opposed to renters or mortgage-free owners.

Of the 12.4 million households in Canada, more than 8.5 million, over two-thirds (68.4%) owned their home, the highest rate since 1971. At the same time, the proportion of households that rented their home slipped from 33.8% in 2001 to 31.2% in 2006.

An estimated 3.0 million households, or 24.9% of the total, spent 30% or more of their income on shelter, a slight gain from 2001. Among homeowners with mortgages, the proportion was 25.7%, up from 23.6% in 2001.

Shelter costs increased faster than the Consumer Price Index. For renter households, median annual shelter costs rose by 12.8% between 2001 and 2006. Over the same period, consumer prices increased by 11.3%. For owner households, spending on shelter increased by 21.6%, almost twice the increase in consumer prices.

For more information, see the June 4, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca)

■ *Hours worked and labour productivity in the provinces and territories*

Newfoundland and Labrador led the nation in labour productivity growth in 2007, while Alberta had the largest decline. In both cases, changes in the relative contribution of conventional crude oil extraction played a large role.

Nationally, productivity increased 0.7% in 2007, similar to the pace in 2006, but much weaker than in 2005. The increase occurred in the context of an appreciating Canadian dollar, and natural resource prices that remained high because of strong global demand.

Productivity surged 9.2% in Newfoundland and Labrador thanks to a recovery from the output disruptions that hindered oil extraction in 2006.

In Alberta, the transition from the traditional oil industry to the more costly oil sands continued. At the same time, Alberta's booming population led to an expansion of the labour-intensive service sector. Both changes shifted the economy away from higher productivity activities.

Labour productivity increases also surpassed the national average in Prince Edward Island, Manitoba, Quebec, New Brunswick, Saskatchewan, Ontario, Yukon, and the Northwest Territories.

For more information, see the May 14, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Canada's immigrant labour market*

Employment among core-age immigrants (25 to 54) increased 2.1% in 2007, thanks in large part to gains among immigrants in Quebec.

Despite this increase, the employment rate gap between immigrants and the Canadian born widened as the population of immigrants increased much faster than their employment. While the immigrant employment rate edged up 0.2 of a percentage point to 77.9%, the employment rate for the Canadian born rose by 0.7 of a percentage point to 83.8%.

Employment among core working-age immigrants rose by 52,000, or 2.1%, from 2006. This was stronger than the 1.3% growth among the Canadian born in the same age group.

Employment for core-age immigrants reached nearly 2.5 million. Full-time employment, which accounted for 90% of those jobs, increased 3.0%.

In 2007, over one-half of the growth in employment among core working-age immigrants occurred in Quebec.

For more information, see the May 13, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *2006 Census: Earnings and income*

Median earnings of Canadians employed on a full-time basis for a full year changed little during the past quarter century, edging up from $41,300 in 1980 to $41,400 in 2005 (in 2005 dollars).

Earnings of full-time full-year earners rose for those at the top of the earnings distribution, stagnated for those in the middle and declined for those at the bottom.

During this 25-year period, recent immigrants lost ground relative to their Canadian-born counterparts. Earnings disparities between recent immigrants and Canadian-born workers increased not only during the two previous decades, but also between 2000 and 2005.

Between 1980 and 2005, median earnings of economic families in which at least one partner, or the parent, was aged between 15 and 64 increased by 9.3% to $63,700. Earnings increases were greater for families than for individuals, mainly due to the increasing participation of women in the labour market.

Although their share has declined, couples with children still have a higher median income than any other type of economic family. In 2005, their median income amounted to $82,900, up 21.6% from 1980, mostly due to the increase in dual-earner families.

The median after-tax income of all economic families in 2005 was $57,200, compared with the total or pretax median income of $66,300.

For more information, see the May 1, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

From other organizations

Youth labour market performance: Canada versus the OECD

Sustained economic growth and a very flexible labour market by international standards have contributed to rising employment rates and falling overall unemployment for all, including youth, according to a recent OECD report.

The employment rate among 15 to 24 year-olds rose to 59.5% in 2007, up from 51.5% in 1997, and well above the OECD average of 44% for both years. During the same period, the youth unemployment rate decreased from 16% to 11%, below the 2007 OECD average of 13%. The long-term youth unemployment incidence is particularly low in Canada, 2% in 2007, compared with an OECD average of 20%.

The school-to-work transition is smooth for most young Canadians, though it varies by province. Some in remote and rural areas and most Aboriginal youth on reserves still have a hard time finding a job.

Canada combines a high youth employment rate with the highest proportion in the OECD of young people attending university or college. Its secondary school drop-out rate, at 8.7% in 2005, is far lower than the 13% OECD average. However, Aboriginal youth and low school achievers are over-represented among early school-leavers, particularly in booming provinces such as Alberta. There are simply too few vocational programs to help them to stay in high school. See the OECD report *Jobs for Youth: Canada*, June 2008, 170 p.

The Francophone/Anglophone wage gap in Canada

The wage differential between Francophone and Anglophone men fell by 25 percentage points from 1970 to 2000 within Quebec, but only by 10 points Canada-wide, largely because the wages of Quebec Anglophones fell by 15 points relative to other Canadian Anglophones. Accordingly, the Canadian measure of the Francophone wage gap better reflects the changing welfare of Francophones than the Quebec measure. Over half of the reduction in the Canadian Francophone wage gap is explained by rising Francophone education levels. In Quebec, the declining number and relative wages of Anglophone workers is best explained by a falling demand for English-speaking labour. See *The wage gap between Francophones and Anglophones: A Canadian Perspective, 1970 to 2000* by David Albouy, NBER working paper No. 14203, July 2008.

Wage and productivity stability in U.S. manufacturing

Manufacturing plants vary considerably, even within industries. Consequently, the 'representative plant' view, which contends that all plants within an industry face the same technological changes and respond similarly, is likely mistaken. Studies using the U.S. Census Bureau's Longitudinal Research Database have demonstrated considerable plant-level heterogeneity in productivity and wages, even within narrowly defined industries.

'Plant effects' that persist over time are also seen. The implication is that unobserved, long-term, plant-specific factors—perhaps including the size and nature of capital endowment, as well as managerial skills and approach—play a sizable role in determining productivity and wage levels. See "Wage and productivity stability in U.S. manufacturing plants" by Mark C. Long, Kristin M. Dziczek, Daniel D. Luria, and Edith A. Wiarda, *Monthly Labor Review*, May 2008.

■ *Time use of working parents in the U.S.*

Working parents have many constraints on their time as they try to balance paid work, childcare, household activities, shopping, and leisure activities. This visual essay uses the 2003–2006 American Time Use Survey (ATUS) and looks at how married parents between the ages of 25 and 54, employed full time (usually working 35 or more hours per week), with at least one biological, step-, or adopted child under age 18, spend their time on an average day.

The ATUS enables analysts to measure how Americans spend their time in primary activities. This includes the time spent providing primary childcare and more passive secondary childcare. Focusing on both primary and secondary childcare gives a more complete picture of parents' time spent providing childcare. See "Time use of working parents: a visual essay" by Mary Dorinda Allard and Marianne Janes, *Monthly Labor Review*, June 2008.

Perspectives

Varia

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Unionization

Unionization rates in first half of 2007 and 2008

Average paid employment (employees) during the first half of 2008 was 14.4 million, an increase of 317,000 over the same period a year earlier (Table 1). On the other hand, union membership increased by only 53,000 to 4.2 million. With union membership growing less rapidly than employment, the unionization rate declined slightly from 29.7% to 29.4%.

Unionization rates remained unchanged for women and declined slightly for men. At 30.0%, the women's rate in 2008 continued to exceed the rate for men (28.7%).

Unionization declined slightly in both the public and private sectors, to 71.0% and 16.3% respectively.

Five provinces recorded increases: Newfoundland and Labrador, Prince Edward Island, New Brunswick, Saskatchewan and Alberta. The five remaining provinces saw decreases (Chart A).

Unionization rates fell from 31.2% to 30.9% for full-time workers and from 22.9% to 22.7% for part-time workers.

Chart A   Newfoundland and Labrador, the most unionized province; Alberta, the least
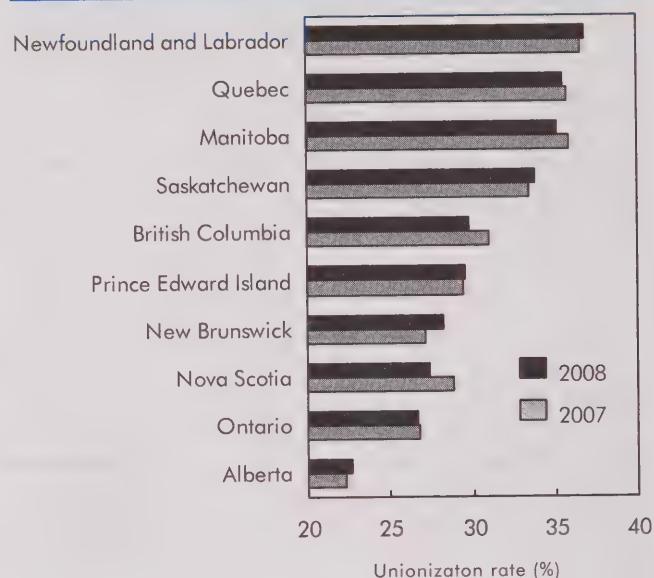
Source: Statistics Canada, Labour Force Survey, January-to-June averages.

The unionization rate for permanent employees declined to 29.7%, but increased to 26.8% for those in non-permanent jobs. The rate fell in workplaces with fewer than 20 employees, and in those with 100 to 500. On the other hand, it increased in those with more than 500 employees and those with 20 to 99 employees.

Unionization rose in 5 of the 16 major industry groups: mining, oil and gas; public support services; business, building and other services; educational services; and public administration. It remained stable for agriculture, while all other industry groups registered declines (Chart B).

Chart B   The highest unionization rates were in public sector industries
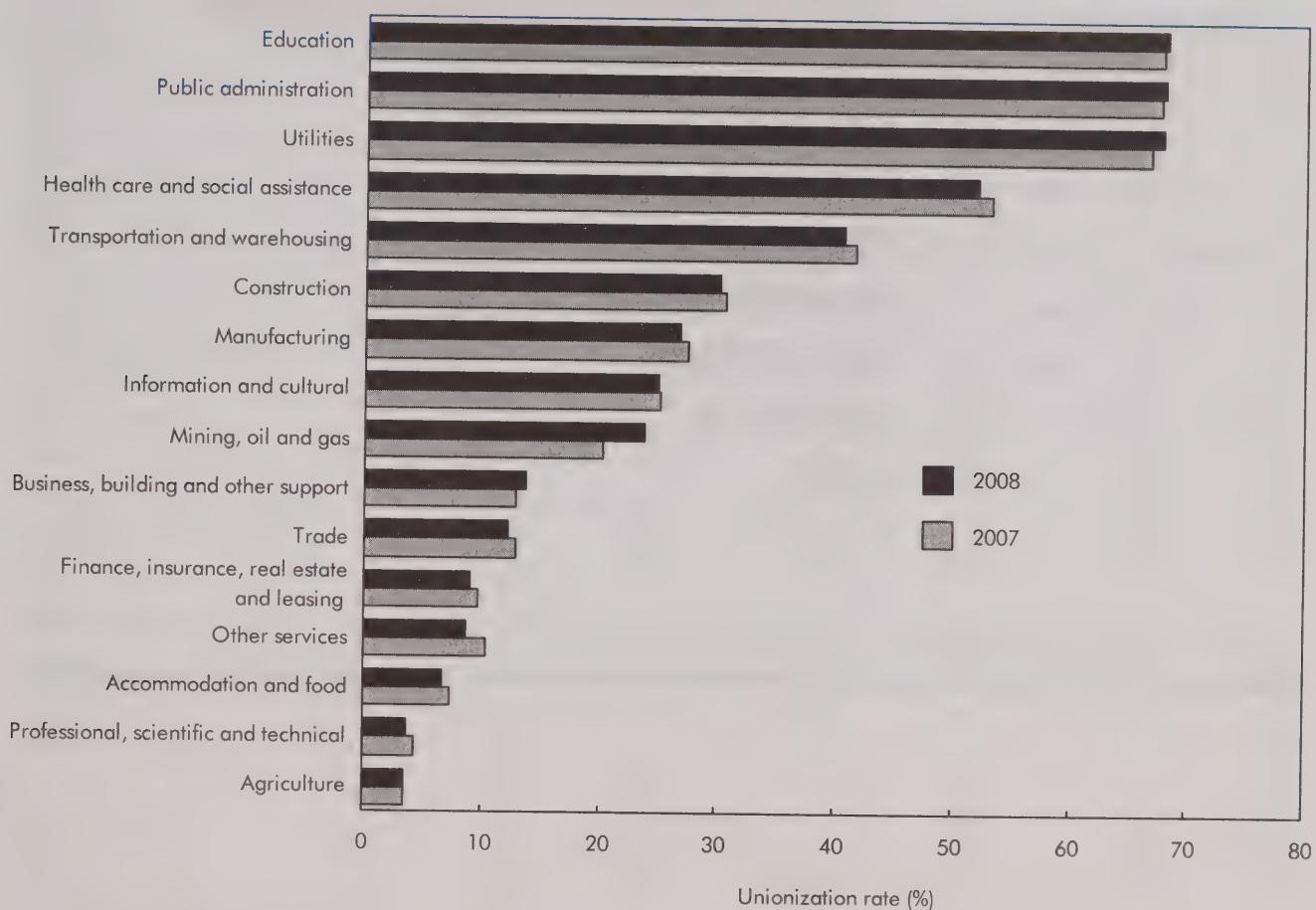
Source: Statistics Canada, Labour Force Survey, January-to-June averages.

Among the 10 major occupational groups, unionization rose in 4: art, culture, recreation and sport; primary sector occupations; those unique to processing, manufacturing and public utilities; and sales and service. Management remained stable, while the rest showed declines (Chart C).

The number of employees who were not union members but were covered by a collective agreement averaged 301,000 in the first half of 2008, down slightly from 308,000 a year earlier (data not shown—see Akyeampong 2000 for a description of this group).

Chart C   Unionization in community service occupations far outpaced that in others
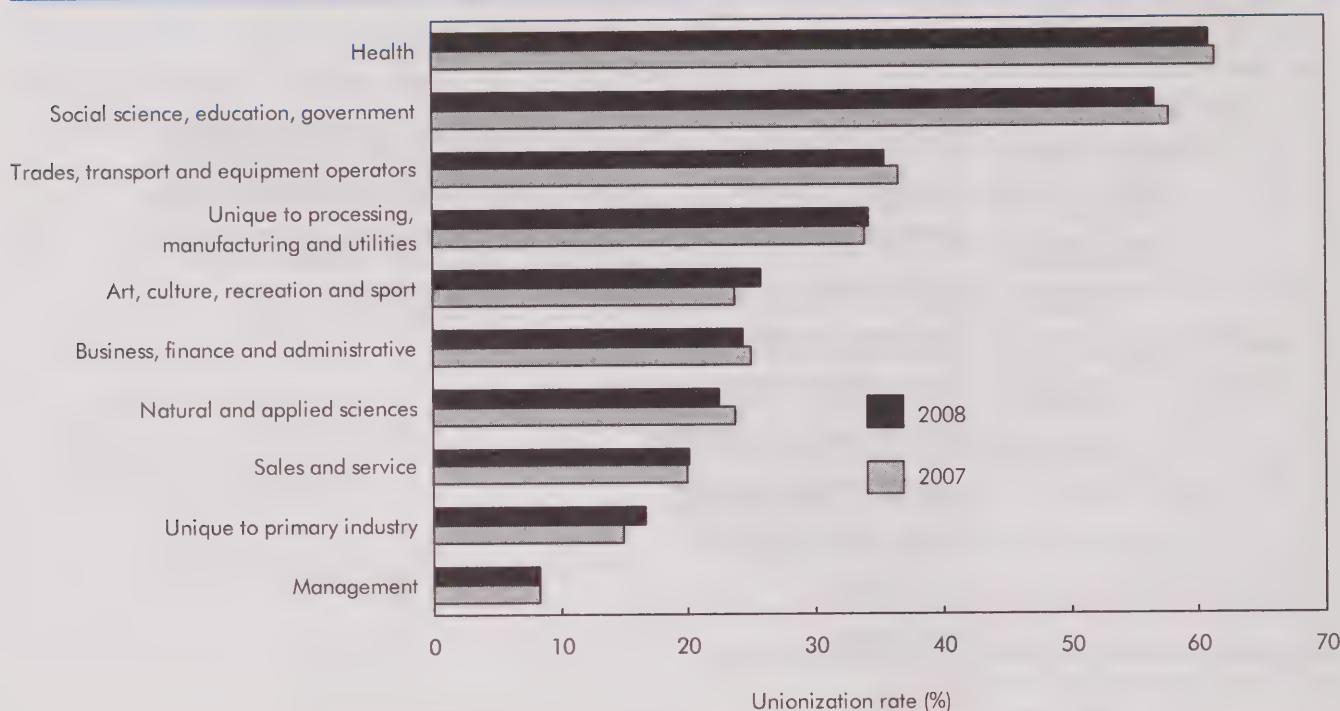
Source: Statistics Canada, Labour Force Survey, January-to-June averages.

Table 1   Union membership and coverage by selected characteristics

	2007			2008		
	Total employees	Union density		Total employees	Union density	
		Members	Coverage[1]		Members	Coverage[1]
	'000	%	%	'000	%	%
Both sexes	**14,087**	**29.7**	**31.8**	**14,404**	**29.4**	**31.5**
Men	7,059	29.3	31.7	7,221	28.7	31.1
Women	7,027	30.0	32.0	7,183	30.0	31.9
Sector[2]						
Public	3,257	71.7	75.2	3,443	71.0	74.5
Private	10,830	17.0	18.8	10,962	16.3	17.9
Age						
15 to 24	2,418	13.3	15.0	2,464	13.5	15.2
25 to 54	9,911	32.7	35.0	10,032	32.3	34.5
25 to 44	6,592	29.8	32.1	6,614	29.4	31.8
45 to 54	3,319	38.3	40.7	3,418	37.7	39.7
55 and over	1,758	35.1	37.4	1,909	34.6	36.5
Education						
Less than Grade 9	323	25.9	27.7	316	24.7	26.0
Some high school	1,490	21.1	22.8	1,502	19.9	21.6
High school graduation	2,874	25.8	27.4	2,877	25.9	27.5
Some postsecondary	1,188	20.9	22.9	1,283	22.1	23.8
Postsecondary certificate or diploma	4,937	33.8	36.2	5,063	33.0	35.3
University degree	3,274	34.1	36.9	3,364	34.3	36.9
Province						
Atlantic	945	29.9	31.2	962	29.7	31.2
Newfoundland and Labrador	187	36.6	38.3	193	36.8	39.0
Prince Edward Island	58	29.5	30.7	60	29.6	31.1
Nova Scotia	386	28.9	30.0	390	27.4	28.2
New Brunswick	314	27.1	28.4	319	28.3	30.0
Quebec	3,259	35.8	39.4	3,299	35.5	39.2
Ontario	5,548	26.8	28.5	5,658	26.7	28.2
Prairies	2,516	26.8	28.7	2,592	26.9	28.8
Manitoba	505	35.9	37.7	517	35.1	37.1
Saskatchewan	405	33.4	35.3	415	33.8	35.3
Alberta	1,606	22.3	24.2	1,660	22.7	24.6
British Columbia	1,818	31.0	32.9	1,894	29.8	31.4
Work status						
Full-time	11,483	31.2	33.5	11,765	30.9	33.1
Part-time	2,604	22.9	24.6	2,639	22.7	24.3
Industry						
Goods-producing	3,209	28.2	30.5	3,214	28.4	30.4
Agriculture	122	3.5	5.1	116	3.5	4.2
Mining, oil and gas	285	20.2	22.1	285	23.7	25.6
Utilities	131	66.7	71.2	151	67.7	70.5
Construction	727	30.6	32.8	802	30.2	32.0
Manufacturing	1,944	27.5	29.7	1,861	26.8	28.8
Service-producing	10,877	30.1	32.2	11,190	29.6	31.8
Trade	2,355	12.9	14.5	2,392	12.2	13.8
Transportation and warehousing	673	41.7	43.8	700	40.6	42.5
Finance, insurance, real estate and leasing	877	9.7	11.2	894	9.0	10.6
Professional, scientific and technical	743	4.3	5.5	811	3.6	4.9
Business, building and other support	519	12.9	14.7	522	13.7	15.3
Education	1,175	67.8	71.5	1,187	68.1	71.7
Health care and social assistance	1,605	53.3	55.5	1,650	52.1	53.8
Information and cultural	642	25.1	26.8	632	24.9	26.9
Accommodation and food	961	7.4	8.3	964	6.7	7.6
Other	488	10.3	12.5	519	8.7	10.7
Public administration	839	67.6	72.6	918	67.9	73.6

Table 1   Union membership and coverage by selected characteristics (concluded)

	2007			2008		
	Total employees	Union density		Total employees	Union density	
		Members	Coverage[1]		Members	Coverage[1]
	'000	%	%	'000	%	%
Occupation						
Management	988	8.3	10.9	1,036	8.3	10.8
Business, finance and administrative	2,700	24.9	27.0	2,840	24.3	26.3
Professional	378	17.2	18.9	395	17.1	18.9
Financial and administrative	685	23.2	25.6	775	22.4	24.6
Clerical	1,637	27.3	29.4	1,670	26.9	28.8
Natural and applied sciences	1,030	23.7	25.8	1,074	22.5	24.8
Health	864	61.4	63.2	882	60.9	63.1
Professional	101	40.2	45.3	89	41.6	47.0
Nursing	266	81.2	82.9	275	77.2	79.1
Technical	229	56.5	58.0	208	56.4	58.5
Support staff	268	53.8	55.0	310	55.1	56.6
Social and public service	1,298	57.7	61.0	1,351	56.7	59.4
Legal, social and religious workers	589	36.8	40.0	640	37.1	39.4
Teachers and professors	710	75.1	78.4	711	74.3	77.4
Secondary and elementary	478	86.8	89.0	480	86.4	88.2
Other	232	50.8	56.6	231	49.0	54.8
Art, culture, recreation and sport	301	23.7	26.1	330	25.8	28.8
Sales and service	3,674	20.0	21.7	3,658	20.1	21.8
Wholesale	381	5.4	6.5	361	4.9	6.0
Retail	1,062	12.3	13.6	1,037	11.6	12.8
Food and beverage	561	7.8	8.6	533	9.1	10.0
Protective services	231	54.9	62.0	245	51.8	59.0
Child care and home support	190	45.6	48.7	185	47.3	49.6
Travel and accommodation	1,250	26.1	27.7	1,297	25.9	27.3
Trades, transport and equipment operators	2,007	36.5	38.8	2,094	35.5	37.5
Contractors and supervisors	111	32.3	34.9	134	28.6	30.6
Construction trades	256	37.7	39.9	274	37.5	39.6
Other trades	793	39.6	41.9	850	36.4	38.6
Transportation equipment operators	511	36.3	38.1	492	37.0	38.6
Helpers and labourers	337	29.8	33.2	343	32.3	34.4
Unique to primary industry	277	14.9	16.9	263	16.7	18.6
Unique to processing, manufacturing and utilities	946	33.9	36.2	876	34.2	36.4
Machine operators and assemblers	751	33.9	36.1	697	34.5	36.8
Labourers	196	33.6	36.5	178	33.0	34.9
Workplace size						
Under 20 employees	4,598	13.1	14.7	4,713	12.6	14.2
20 to 99 employees	4,638	30.0	32.3	4,708	30.3	32.4
100 to 500 employees	2,976	41.1	43.8	3,073	39.6	42.0
Over 500 employees	1,874	51.2	53.8	1,910	52.0	54.8
Job tenure						
1 to 12 months	3,341	14.9	17.3	3,432	15.9	18.2
Over 1 year to 5 years	4,448	23.1	25.1	4,584	22.8	24.6
Over 5 years to 9 years	2,206	32.9	35.1	2,135	33.4	35.6
Over 9 years to 14 years	1,308	36.6	38.7	1,434	35.3	37.0
Over 14 years	2,784	51.9	54.4	2,819	50.4	52.8
Job status						
Permanent	12,310	30.2	32.3	12,728	29.7	31.7
Non-permanent	1,777	25.8	28.5	1,676	26.8	29.6

1. Union members and persons who are not union members but covered by collective agreements (for example, some religious group members).
2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.
Source: Statistics Canada, Labour Force Survey, January-to-June averages.

2007 annual averages

Approximately 4.2 million employees (29.3%) (Table 2) belonged to a union in 2007 and some 316,000 (2.2%) were covered by a collective agreement.

Those in the public sector—government, Crown corporations, and publicly funded schools or hospitals—were over four times more likely than their private-sector counterparts to belong to a union (71.0% versus 16.8%).

Almost one in three full-time employees belonged to a union, compared with about one in four part-time. Also, almost one in three permanent employees were union members, compared with one in four non-permanent.

High unionization rates were found among employees aged 45 to 54 (38.2%); among those with a university degree (33.6%) or a post- secondary certificate or diploma (33.5%); in Newfoundland and Labrador (36.0%) and in Quebec (35.9%); as well as in educational services (66.9%), public administration (67.5%), and utilities (65.7%); and in health care occupations (61.9%). Low unionization rates were recorded among 15 to 24 year-olds (13.2%); in Alberta (21.8%); in agriculture (4.0%) and professional, scientific and technical services (4.3%); and in management occupations (8.3%).

Table 2   Union membership, 2007

	Total employees	Union member[1]	
		Total	Density
	'000	'000	%
Both sexes	14,251	4,175	29.3
Men	7,186	2,070	28.8
Women	7,066	2,105	29.8
Sector[2]			
Public	3,283	2,331	71.0
Private	10,969	1,845	16.8
Age			
15 to 24	2,500	330	13.2
25 to 54	9,959	3,226	32.4
25 to 44	6,607	1,944	29.4
45 to 54	3,353	1,282	38.2
55 and over	1,792	620	34.6
Education			
Less than Grade 9	325	80	24.7
Some high school	1,496	306	20.5
High school graduation	2,932	754	25.7
Some postsecondary	1,220	257	21.1
Postsecondary certificate or diploma	5,003	1,677	33.5
University degree	3,276	1,101	33.6
Province			
Atlantic	964	282	29.2
Newfoundland and Labrador	193	70	36.0
Prince Edward Island	60	17	28.3
Nova Scotia	391	111	28.4
New Brunswick	321	85	26.5
Quebec	3,300	1,183	35.9
Ontario	5,607	1,486	26.5
Prairies	2,540	667	26.3
Manitoba	508	178	35.0
Saskatchewan	409	135	33.1
Alberta	1,623	354	21.8
British Columbia	1,841	557	30.3
Work status			
Full-time	11,716	3,599	30.7
Part-time	2,535	577	22.7
Industry			
Goods-producing	3,278	928	28.3
Agriculture	127	5	4.0
Mining, oil and gas	288	60	20.8
Utilities	138	91	65.7
Construction	780	238	30.5
Manufacturing	1,944	534	27.5
Service-producing	10,974	3,248	29.6
Trade	2,380	303	12.7
Transportation and warehousing	680	277	40.7
Finance, insurance, real estate and leasing	877	84	9.6
Professional, scientific and technical	757	32	4.3
Business, building and other support	542	69	12.7
Education	1,130	756	66.9
Health care and social assistance	1,621	862	53.2
Information and cultural	661	165	25.0
Accommodation and food	970	71	7.3
Other	492	45	9.1
Public administration	864	583	67.5

Table 2   Union membership, 2007 (concluded)

	Total employees	Union member[1]	
		Total	Density
	'000	'000	%
Occupation			
Management	1,006	84	8.3
Business, finance and administrative	2,753	677	24.6
Professional	376	64	17.1
Financial and administrative	712	163	23.0
Clerical	1,666	449	27.0
Natural and applied sciences	1,051	243	23.2
Health	864	535	61.9
Professional	98	41	41.6
Nursing	273	218	79.7
Technical	217	125	57.8
Support staff	276	151	54.7
Social and public service	1,276	716	56.1
Legal, social and religious workers	600	217	36.2
Teachers and professors	676	499	73.8
Secondary and elementary	447	385	86.1
Other	229	114	49.8
Art, culture, recreation and sport	324	79	24.3
Sales and service	3,687	726	19.7
Wholesale	384	20	5.1
Retail	1,069	127	11.9
Food and beverage	556	44	7.9
Protective services	235	129	54.8
Child care and home support	178	82	46.3
Travel and accommodation	1,265	324	25.6
Trades, transport and equipment operators	2,066	753	36.4
Contractors and supervisors	114	36	31.7
Construction trades	275	110	39.8
Other trades	811	318	39.2
Transportation equipment operators	519	184	35.5
Helpers and labourers	347	105	30.2
Unique to primary industries	293	44	15.1
Unique to processing, manufacturing and utilities	930	320	34.4
Machine operators and assemblers	737	252	34.3
Labourers	194	67	34.7
Workplace size			
Under 20 employees	4,684	607	13.0
20 to 99 employees	4,670	1,375	29.5
100 to 500 employees	2,994	1,207	40.3
Over 500 employees	1,904	985	51.7
Job tenure			
1 to 12 months	3,425	509	14.8
Over 1 year to 5 years	4,494	1,031	22.9
Over 5 years to 9 years	2,209	722	32.7
Over 9 years to 14 years	1,321	478	36.2
Over 14 years	2,802	1,436	51.2
Job status			
Permanent	12,409	3,710	29.9
Non-permanent	1,843	465	25.3

1. Excludes non-members covered by a collective agreement.
2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.
Source: Statistics Canada, Labour Force Survey.

Differences between the sexes

For the fourth year in a row, the unionization rate for women in 2007 surpassed that of men (29.8% versus 28.8%).

Among men, part-time employees had a much lower rate than full-time employees (18.0% versus 30.1%). Among women, the gap was narrower (24.8% versus 31.5%) (data not shown). The unionization rate for women in the public sector (72.8%) exceeded that of men (68.2%), reflecting women's presence in public administration, and in teaching and health positions. However, in the private sector, only 12.5% were unionized, compared with 20.9% of men. The lower rate among women reflected their predominance in sales and several service occupations.

A higher-than-average rate was recorded among men with a postsecondary certificate or diploma (33.9%). For women, the highest rate was among those with a university degree (40.0%), reflecting unionization in occupations like health care and teaching.

Among those in permanent positions, the rate for men (29.6%) was similar to that for women (30.2%). Among those in non-permanent positions, women were more unionized than men (27.2% versus 23.2%).

Average earnings and usual hours

Unionized jobs generally provide higher earnings than non-unionized jobs (Table 3). However, factors other than collective bargaining provisions also play a role. These include varying distributions of unionized employees by age, sex, job tenure, industry, occupation, firm size, and geographical location.

Although the effects of these factors have not been examined, it is clear that unionized workers and jobs tend to have certain characteristics that are associated with higher earnings. For example, the unionization rate is higher among older workers, those with higher education, those with long tenure, and those in larger workplaces. Although differences in earnings and non-wage benefits cannot be attributed solely to union status (Akye-ampong 2002), the union wage premium (after adjusting for employee and workplace characteristics) has been estimated at 7.7% (Fang and Verma 2002).

In 2007, the average hourly earnings of unionized workers were higher than those of non-unionized workers. This held true for both full-time ($24.15 versus $20.55) and part-time ($19.99 versus $12.56) employees.

In addition to having higher hourly earnings, unionized part-time employees generally worked more hours per

Table 3 Average earnings and usual hours by union and job status, 2007

	Hourly earnings			Usual weekly hours, main job		
	All employees	Full-time	Part-time	All employees	Full-time	Part-time
	$					
Both sexes	20.41	21.73	14.33	35.6	39.5	17.4
Union member	23.58	24.15	19.99	36.0	38.7	19.3
Union coverage[1]	23.51	24.11	19.81	36.0	38.7	19.1
Not a union member[2]	18.98	20.55	12.56	35.4	39.9	16.9
Men	22.17	23.24	13.25	38.1	40.7	16.5
Union member	24.38	24.83	18.10	38.4	39.8	18.2
Union coverage[1]	24.32	24.79	17.94	38.4	39.9	18.0
Not a union member[2]	21.20	22.50	12.07	38.0	41.1	16.2
Women	18.62	19.89	14.80	33.0	38.0	17.8
Union member	22.79	23.36	20.59	33.6	38.0	19.6
Union coverage[1]	22.71	23.31	20.43	33.6	37.3	19.5
Not a union member[2]	16.71	18.16	12.78	32.6	38.3	17.2
Atlantic	17.22	18.19	12.22	36.7	40.4	17.5
Union member	21.98	22.22	19.76	37.6	39.5	20.0
Union coverage[1]	21.90	22.16	19.54	37.6	39.6	19.8
Not a union member[2]	15.15	16.24	10.50	36.3	40.8	17.0
Quebec	19.35	20.52	14.15	34.5	38.2	18.0
Union member	22.10	22.52	19.41	35.2	37.6	20.0
Union coverage[1]	21.92	22.39	18.98	35.3	37.7	19.8
Not a union member[2]	17.66	19.17	12.14	34.0	38.6	17.2
Ontario	21.27	22.83	14.01	35.6	39.6	17.0
Union member	24.86	25.70	19.48	36.1	38.9	18.6
Union coverage[1]	24.85	25.70	19.41	36.2	38.9	18.5
Not a union member[2]	19.86	21.62	12.53	35.3	39.8	16.7
Prairies	21.06	22.24	15.04	36.7	40.5	17.4
Union member	23.71	24.23	20.59	36.4	39.3	19.3
Union coverage[1]	23.81	24.34	20.60	36.5	39.4	19.2
Not a union member[2]	19.97	21.39	13.24	36.8	40.9	16.8
British Columbia	20.49	21.67	15.62	35.3	39.6	17.5
Union member	23.94	24.39	21.61	35.8	39.0	19.3
Union coverage[1]	23.93	24.41	21.49	35.8	39.1	19.1
Not a union member[2]	18.86	20.29	13.47	35.0	39.9	16.9

1. Union members and persons who are not union members but covered by collective agreements (for example, some religious group members).
2. Workers who are neither union members nor covered by collective agreements.
Source: Statistics Canada, Labour Force Survey.

week than their non-unionized counterparts (19.3 versus 16.9). As a result, their average weekly earnings were much higher ($391.14 versus $216.43) (data not shown).

On average, unionized women working full time received about 94% as much in hourly earnings as their male counterparts. In contrast, unionized women working part time earned 14% more.

Wage settlements, inflation and labour disputes

Wage gains of 3.3% in 2007 significantly surpassed the rate of inflation (1.9%) (Table 4). This reflects the third consecutive year in which wage increases were greater than the rate of inflation, although the differences in the two preceding years were not significant. The 2007 trend continued during the first four months of 2008, with wage gains averaging 3.4%, while inflation stood at 1.8%.

Wage gains in the public sector in 2007 (3.4%) surpassed those in the private sector (3.1%). The gap reversed and widened in the first four months of 2008. The corresponding gains were 3.2% and 4.0%.

Annual statistics on strikes, lockouts and person-days lost are affected by several factors, including collective bargaining timetables, size of the unions involved, strike or lockout duration, and state of the economy. The number of collective agreements up for renewal in a year determines the potential for industrial disputes. Union size and strike or lockout duration determine

Table 4   Major wage settlements, inflation and labour disputes

	Average annual increase in base wage rates[1]			Annual change in consumer price index[1]	Labour disputes and time lost[3]			
Year	Public sector employees[2]	Private sector employees[2]	Total employees		Strikes and lockouts[4]	Workers involved	Person-days not worked	Proportion of estimated working time
			%			'000	'000	%
1980	10.9	11.7	11.1	10.1	1,028	452	9,130	0.37
1981	13.1	12.6	13.0	12.4	1,049	342	8,850	0.35
1982	10.4	9.5	10.2	10.9	679	464	5,702	0.23
1983	4.6	5.5	4.8	5.8	645	330	4,441	0.18
1984	3.9	3.2	3.6	4.3	716	187	3,883	0.15
1985	3.8	3.3	3.7	4.0	829	164	3,126	0.12
1986	3.6	3.0	3.4	4.1	748	486	7,151	0.27
1987	4.1	3.8	4.0	4.4	668	582	3,810	0.14
1988	4.0	5.0	4.4	4.0	548	207	4,901	0.17
1989	5.2	5.2	5.2	5.0	627	445	3,701	0.13
1990	5.6	5.7	5.6	4.8	579	271	5,079	0.17
1991	3.4	4.4	3.6	5.6	463	254	2,516	0.09
1992	2.0	2.6	2.1	1.5	404	152	2,110	0.07
1993	0.6	0.8	0.7	1.8	381	102	1,517	0.05
1994	0.0	1.2	0.3	0.2	374	81	1,607	0.06
1995	0.6	1.4	0.9	2.2	328	149	1,583	0.05
1996	0.5	1.7	0.9	1.6	330	276	3,269	0.11
1997	1.1	1.8	1.5	1.6	284	258	3,608	0.12
1998	1.6	1.8	1.7	0.9	381	244	2,444	0.08
1999	2.0	2.7	2.2	1.7	413	160	2,443	0.08
2000	2.5	2.4	2.5	2.7	379	144	1,657	0.05
2001	3.4	3.0	3.3	2.6	381	221	2,199	0.07
2002	2.9	2.6	2.8	2.2	294	168	3,033	0.09
2003	2.9	1.2	2.5	2.8	266	81	1,736	0.05
2004	1.4	2.3	1.8	1.9	297	260	3,209	0.09
2005	2.2	2.5	2.3	2.2	260	199	4,150	0.12
2006	2.6	2.2	2.5	2.4	151	42	791	0.02
2007	3.4	3.1	3.3	1.9	207	67	1,791	0.05
2008[5]	3.2	4.0	3.4	1.8				

1. Involving 500 or more employees.
2. Public sector employees are those working for government departments or agencies; Crown corporations; or publicly funded schools, hospitals or other institutions. Private sector employees are all other wage and salary earners.
3. Involving 1 worker or more.
4. Ten person-days not worked.
5. 2008 data refer to January to April only.
Sources: Statistics Canada, Prices Division; Human Resources and Social Development Canada, Workplace Information Directorate .

the number of person-days lost. The state of the economy influences the likelihood of an industrial dispute, given that one is legally possible. The estimated number of person-days lost through strikes and lock-outs dropped to less than a fifth, from 4.1 million in 2005 to 791,000 in 2006. In 2007, however, it rebounded sharply, reaching 1.8 million.

Perspectives

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PERSPECTIVES

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PERSPECTIVES

ON LABOUR AND INCOME

■ Departments

■ Articles

In 2007, the proportion of employed people in Canada was at its
highest level in at least three decades, while the national
unemployment rate sank to a 33-year low of 5.8%. However,
manufacturing employment in Canada, as in the United States, has
been on a downward trend. Between 2002 and 2007 employment
rates increased the most in the highest-paying industries and
occupations. On the other hand, some job losses were experienced
by machine operators and assembly workers. Retail trade had
been the largest creator of new jobs but was surpassed in 2007 by
construction, and health care and social assistance.

Education and training continue to be important in the labour
market. To many, this implies a university degree. But society also
needs tradesworkers to perform many vital tasks—build houses,
run the electrical lines, fix plumbing and maintain cars—to name
just a few. Many businesses are reporting difficulties finding skilled
tradespersons and governments are responding with policies to
stimulate employment in the trades. Employment trends in selected
trades over the past 20 years are examined, along with the socio-
economic traits of the workers and the characteristics of their jobs.

Interprovincial migration is a key component of demographic
change in Canada. It also influences the supply of public services
and tax revenues, the performance and efficiency of labour markets
and productivity. As one would expect, people generally move
from provinces with slack local labour markets to provinces with
stronger labour markets. Improvements in labour market conditions
and labour market outcomes tend to reduce out-migration rates.
Migrants also record better earnings growth than non-migrants,
especially when they are young.

Symbols

The following standard symbols are used in Statistics Canada publications:

.   not available for any reference period
..   not available for a specific reference period
...   not applicable
0   true zero or a value rounded to zero
0$ value rounded to 0 (zero) where a meaningful distinction exists between true zero and the value rounded
p   preliminary
r   revised
x   suppressed to meet the confidentiality requirements of the *Statistics Act*
E   use with caution
F   too unreliable to be published

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Highlights

In this issue

■ Trends in employment and wages, 2002 to 2007   ... p. 5

■ While employment dropped in manufacturing over the six-year period from 2002 to 2007, increases in construction and health care and social assistance more than offset the decline. Employment growth in retail trade over the same period made it the country's largest industry for jobs by 2007.

■ Overall real wages increased over the period, in part due to the run-up in wages in a number of fast-expanding occupations, including supervisors and service workers in mining, oil and gas extraction as well as other managers in business, finance, health, education and government.

■ More of the job losses in manufacturing over the 2002 to 2007 period occurred in textiles and clothing, which paid a lower average hourly wage than transportation equipment manufacturing, such as motor vehicles and parts.

■ In Ontario, machine operators working in manufacturing experienced more reductions in staff at the mid-range of the pay scale; in Quebec, reductions occurred almost equally in the mid-range and lower-wage groups. This is related to the mix of manufacturing industries found in each province.

■ Skilled trades employment   ... p. 17

■ In 2007, just over 1 million people worked in eight selected trades (for example, mechanics, machinists and carpenters). After declines in the late 1980s and early 1990s, employment growth in

these occupations virtually matched that of other occupations. Following a higher peak for tradesworkers during the recession of the early 1990s, overall unemployment rates for the trades and other occupations have been virtually the same over the past 10 years. Three trades occupations had consistently higher unemployment rates (carpenters, masons and other construction trades) and two consistently lower (electricians and mechanics).

■ Economic growth in the two westernmost provinces had a strong impact on the trades. In 1987, less than 20% of all trades employment was found in these two provinces; twenty years later it reached nearly 30%. This is in contrast to employment in other occupations which went from 21% to 25%.

■ The average age of those working in these selected trades was under 40 in 2007—slightly younger than other workers (41). The ratio of entrants (age 25 to 34) to near-retirees (50 or older) shows that workers in the trades were more in balance overall in 2007 than those in other occupations (1.0 versus 0.7). This varied between the trades, with plumbers and masons having more younger workers (at about 1.5) and electricians being closer to the non-trades.

■ Self-employment, particularly without employees, is a growing phenomenon among tradespersons. In 1987, only 9% of those employed in the trades were self-employed; by 2007, this increased to 15%. Some trades, including electricians and machinists, saw even higher growth rates—even though their self-employment rates still remained lower than for the non-trades occupations.

■ Interprovincial mobility and earnings ... p. 27

- In any given year, relatively few people move from one province to another. From 1993 to 2004, the annual migration rate for those age 20 to 54 never exceeded 1.1%. Newfoundland and Labrador, Prince Edward Island and Saskatchewan had the highest out-migration rates; Quebec and Ontario had the lowest.

- Francophones outside Quebec and especially Anglophones in Quebec were more likely to migrate to another province than other Canadians. Younger people were also much more likely to migrate.

- The probability of leaving a province was higher for people with low earnings, receiving employment insurance or on social assistance. On average, each time a province's unemployment rate rose by one percentage point, the probability of residents leaving rose by 10%.

- Men who migrated experienced an average earnings growth of 15% from the year prior to migration to the year after migration—almost twice as much as non-migrants (8%). The average earnings growth for women who migrated was 12%, compared with 8% for non-migrants.

■ Bridge employment ... p. 39

- Between 1999 and 2004, the proportion of persons age 50 to 69 in paid employment after retiring from a career job averaged 9%.

- The likelihood of leaving career employment for bridge employment was higher for those with an employer-sponsored pension plan, the university educated, and those with higher hourly earnings.

- Other factors that increased the likelihood of bridge employment included having a spouse/partner who was not working and living in a rural area.

- Retirees who returned to the labour market were most likely to do so in the first year following their retirement. And of those who returned to work, many were still working after four years.

■ Rural commuting ... p. 47

- Rural commuters are as dependent on rural-based jobs as they are on urban-based jobs.

- The rural labour pool is not a major supplier of workers to urban-based jobs—only 4% of urban jobs are filled by rural residents. However, these urban-based jobs take 16% of the rural workforce.

- Urban workers fill a small but sizeable share of rural-based jobs—about 7%. However, these rural-based jobs provide employment for only 1% of urban workers.

■ What's new? ... p. 56

- **From Statistics Canada**

  Workplace and Employee Survey: Compensation practices

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  Human capital risk and firm-size wage premium

  Work expectations and depression in older workers

  Psychiatric disorders and employment

  What makes them tick?

Perspectives

Trends in employment and wages, 2002 to 2007

Jane Lin

I n 2007, Canada had the highest proportion of people employed in at least three decades and the national unemployment rate sank to a 33-year low of 5.8%. While the 2002 to 2007 period was marked by strong gains in employment, some concerns have arisen over the quality of these new jobs.

Historically, manufacturing employment in Canada, as in the United States, has been on a long downward trend. Once-prominent manufacturing industries such as steel, autos, textiles and clothing, and furniture are shedding jobs, while employment is increasing in the service sector (Krahn and Lowe 2005). In 1946, manufacturing accounted for an estimated 26% of total employment. In the ensuing decades, the economy shifted its focus towards more service-oriented work in health care, education, public administration, trade and finance. By 2007, manufacturing's share of employment had fallen to just 12%. The industry previously faced massive layoffs and factory closures in the recessionary periods of the early 1980s and early 1990s. In 1982, Canadian factories lost 208,000 workers and then, between 1990 and 1992, they lost another 315,000 workers. Even though the 2004 to

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Data sources and definitions

This analysis is based mainly on data from the **Labour Force Survey** (LFS). The primary purpose of the Labour Force Survey is to produce estimates of employment and unemployment and it is the official source of unemployment data at Statistics Canada. In addition, the LFS also collects information on many extrinsic characteristics of job quality such as workers' wages and union coverage along with hours of work.

Data from the **Workplace and Employee Survey** (WES) were used to provide details on worker arrangements such as flexible hours and non-wage benefits. The WES is designed to explore a broad range of issues relating to employers and their employees. The survey aims to shed light on the relationships among competitiveness, innovation, technology use and human resource management on the employer side, and technology use, training, job stability and earnings on the employee side.

The **Survey of Employment, Payrolls and Hours** (SEPH) was used to shed light on wages at a detailed industry level and among hourly paid employees, particularly within the manufacturing industry. SEPH is Canada's only source of detailed information on the total number of paid employees, payrolls and hours at detailed industrial, provincial and territorial levels.

Constant dollar earnings quintiles

All dollar figures are expressed in terms of their value, or purchasing power, in 2007. Real wage growth is presented in 2007 dollar terms and is based on average hourly earnings for workers.

For the purpose of this analysis, workers were divided into five equal groups in 2002 based on their average hourly earnings. The dollar limits of the 2002 quintiles were converted to 2007 values that were then used to create earnings groups for subsequent years.

For the wage analysis on machine operators, workers were grouped into low, medium and high earnings. Workers who were making under $10 per hour in current dollars (unadjusted for inflation) were in the low-wage category. Many low-income studies use the $10 cut-off as a proxy for low-income workers (see 'Low wage and low income', *The Daily* of April 6, 2006 (http://dissemination.statcan.ca/Daily/English/060406/d060406b.htm).

2007 period was a non-recessionary one, manufacturing endured three successive years of employment losses totalling 247,000, for a net decline of 241,000 since 2002.

Overall employment and earnings grew between 2002 and 2007 despite the declines in factory employment. While domestic demand remained robust, the appreciation of the Canadian dollar that began in 2002 rendered 'made in Canada' exports less competitive globally. Displaced factory workers have endured hardships in adjusting to the restructuring— some laid-off workers undoubtedly faced a steep drop in earnings

when moving into other types of work. One previous study found that laid-off workers from the late 1980s and early 1990s suffered an 18% to 35% decline in wages five years after being laid off (Morissette et al. 2007). At the same time, however, other parts of the economy, particularly those based on natural resources, were facing boom times and could not find enough workers.

This article uses the Labour Force Survey to document trends in employment and pay by broad industry and occupation groups. More detailed industry breakdowns are provided by the Survey of Employment, Payrolls and Hours and the Census (see *Data sources and definitions*). Because these surveys are cross-sectional, they provide no information on any flows between industries or occupations. Even so, they point to a labour market undergoing major structural shifts.

While important, pay is not the sole indicator of job quality. Non-wage benefits, work arrangements and skills development and training are also important factors (see *Non-wage benefits*). Other indicators of employment quality include the safety and ethics of employment, work hours, stability and security of work, and social protection, social dialogue and workplace relationships, as well as the intrinsic nature of work (see *Measuring employment quality*).

Recent employment gains spread across several industries

In 2007, employment increased in every major industry, except manufacturing. Construction saw the largest increase, a net of 64,000

additional workers, followed closely by 61,000 in health care and social assistance. These two industries employed an estimated 125,000 more workers in 2007 than they did in the previous year. For every job lost in manufacturing, nearly two were gained in either construction or health care and social assistance. Accommodation and food services, professional, scientific and technical services, and information, culture and recreation also had large employment gains, as did retail trade, from 2006 to 2007. What is notable about retail trade, however, is that the boost of 32,000 workers in 2007 coupled with the loss of

74,000 factory workers put the two industries at the same employment level, each with 2 million workers.

The industry shifts in 2007 are part of a longer-term trend. Over the six-year period from 2002 to 2007, more workers found positions in construction and health care and social assistance than in retail trade (Chart A). The recent manufacturing downturn began in 2004, reversing the trend of the early 1990s when manufacturing was one of the primary drivers of employment growth (Ferrao 2006). However, in hindsight, this can be seen as a blip in the long-term downward trend. Natural resources also

Chart A   From 2002 to 2007 a number of large industries added workers, while manufacturing shed jobs

Employment change ('000)
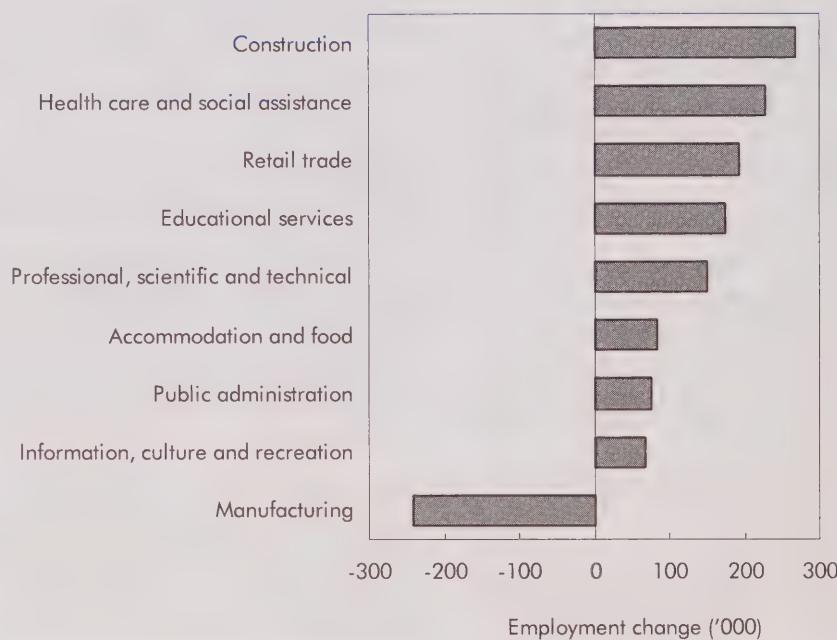
Source: Statistics Canada, Labour Force Survey, 2002 and 2007.

saw very rapid employment growth because of oil, gas and metals, but it remains a small employer relative to other industries.

More higher-paying jobs created

The employment increases from 2002 to 2007 were skewed toward the upper end of the pay scale (Chart B). Workers in the top two of five pay ranges saw the largest gains in numbers. In addition to the increase in their numbers, workers in the top group saw their median pay jump 3.4% from 2002 to 2007. In contrast, workers in the middle group saw a decline of 0.1%. In 2007, overall average hourly pay stood at $20.41 compared with $19.69 (in 2007 dollars) in 2002, representing a real growth of 3.7% over the period (Table 1).

Real earnings increased between 2006 and 2007, continuing a trend evident since 2004 (Chart C). Several factors could explain the successive wage increases even as manufacturing jobs were being cut. Wage growth was not distributed uniformly across the country and Alberta's 5.6% hike played a large part in pushing up the national average, although the province's residents also contended with inflation as high as 5% in 2007 (Chaffe 2008). Workers in higher-paying occupations such as managers in primary production (excluding agriculture) saw an increase of 33% between 2000 and 2005—the highest of all occupations (Frenette et al. 2008). Similarly, the natural resources boom also stimu-

Chart C Hourly earnings outpaced inflation after 2004

Annual change (%)
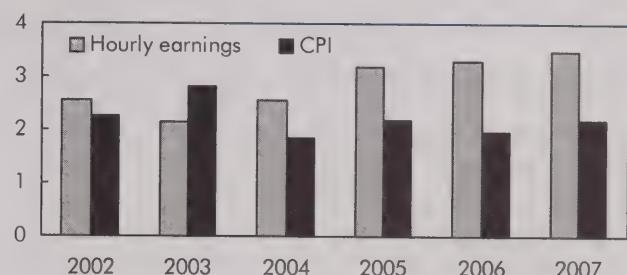
Sources: Statistics Canada, Consumer Price Index and Labour Force Survey.

lated an increase in pay for supervisors in mining, oil and gas, as well as service workers and operators in oil and gas. According to the 2006 Census, these occupations also had a large influx of workers.

Other managers such as those in business, finance, health, education and government saw an increase of 127,000 in their numbers over the six-year period. They earned an average of $31.40 per hour in 2007, much higher than the overall average. Schools and uni-

Chart B The two highest paid groups saw the biggest influx of workers

'000

Based on 2002 earnings quintiles
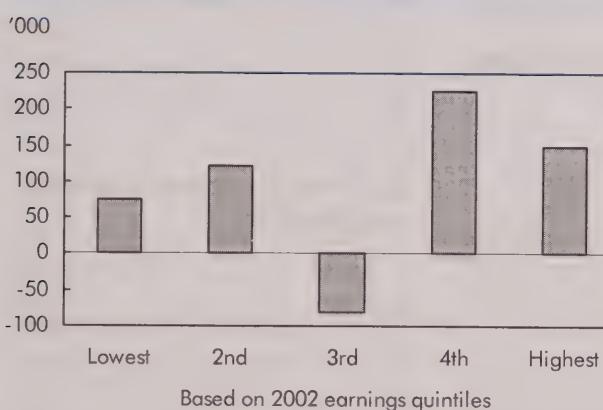
Source: Statistics Canada, Labour Force Survey, 2002 and 2007.

Measuring employment quality

In 2007, the Task Force on the Measurement of the Quality of Employment was created by the Conference of European Statisticians with the mandate to develop a single internationally recognized measurement framework for the quality of employment. Statistics Canada chairs the task force, which consists of several national statistical offices. The goal is to develop a conceptual framework and a procedure to test and validate selected indicators.

The dimensions of the framework comprise safety and ethics of employment, income and benefits from employment, working hours and balancing work and non-working life, stability and security of work and social protection, social dialogue and workplace relationships, skills development and life-long learning, and intrinsic nature of work. For more information see "Toward an International Quality of Work Framework: A report to the Task Force on the Measurement of Quality of Work" (Bowlby 2006), and "Statistical Measurement of Quality of Employment" (Steering Committee on the Measurement of Quality of Employment, www.unece.org/stats/ToS.html).

Table 1 Employment gains and average hourly earnings in selected occupations

	Average hourly earnings			Employ-ment change
	2007	2002	change	
	2007 $		%	'000
All occupations	20.41	19.69	3.7	1,556.0
Higher paying				
Other management	31.40	30.26	3.8	126.8
Teachers and professors	28.84	28.49	1.2	100.6
Natural and applied sciences and related	28.62	28.06	2.0	143.5
Occupations in social science, government and religion	23.42	22.46	4.3	97.1
Other trades	22.06	21.47	2.7	55.6
Professional occupations in health, nurse supervisors and registered nurses	29.75	28.16	5.6	22.2
Lower paying				
Technical, assisting and related occupations in health	20.14	18.72	7.6	73.2
Machine operators and assemblers in manufacturing, including supervisors	18.37	17.81	3.2	-170.0
Clerical, including supervisors	17.10	16.95	0.9	180.1
Trades helpers, construction, and transportation labourers and related	16.46	15.92	3.4	69.1
Other sales and service, including travel and accommodation, attendants in recreation and sport, supervisors	12.30	12.00	2.5	93.4
Retail salespersons, sales clerks, cashiers, including retail trade supervisors	11.61	11.47	1.2	89.2

Source: Statistics Canada, Labour Force Survey.

versities also added 100,000 teachers and professors over the period, paying an average hourly rate of $28.84 in 2007. Natural and applied sciences and related jobs encompass a diverse range of workers, from engineers, architects and scientists to user support technicians—they added 143,000 to their ranks over the period, and earned $28.62 per hour on average in 2007. Jobs in social sciences, government services and religion also got a boost of 97,000 over the six years. In 2007, they earned an above-average $23.42 per hour.

About 180,000 more clerical jobs were also created since 2002; these workers earned $17.10 on average in 2007. Retail salespersons and sales clerks had a lower average hourly pay of $11.61 in 2007; this group of workers grew by 89,000 over the six years. Sales and service jobs not elsewhere classified, like those in travel or accommodation, gained even more workers, adding 93,000 over the period with an average hourly rate of $12.30 in 2007. The biggest gains in health care came from the addition of 73,000 technical, assisting and related workers, which includes medical laboratory technicians as well as nurse aides and pharmacy technicians. On average these workers earned $20.14—about the average wage of all workers. Registered nurses and others in professional occupations in health experienced a more moderate increase of 22,000 between 2002 and 2007; however, their hourly pay was significantly higher at $29.75 in 2007.

The boom in construction also increased demand for workers at all skill and pay levels—just as in health care. Other trades added 56,000 members to their ranks and in 2007 they were paid a higher-than-average $22.06 per hour. This occupation includes residential and commercial installers and service people (such as window and door installers). In contrast, trades helpers, and construction and transport labourers, increased their numbers by 69,000 but earned only $16.46 per hour in 2007.

Declines in manufacturing employment

According to the 2006 Census, machine operators and assemblers saw big job losses over the 2001 to 2006 period (Statistics Canada 2008). This occupational group includes sewing machine operators, pulp and paper machine operators

Chart D   From 2002 to 2007 many machine operators in the low- and mid-wage ranges lost jobs

'000
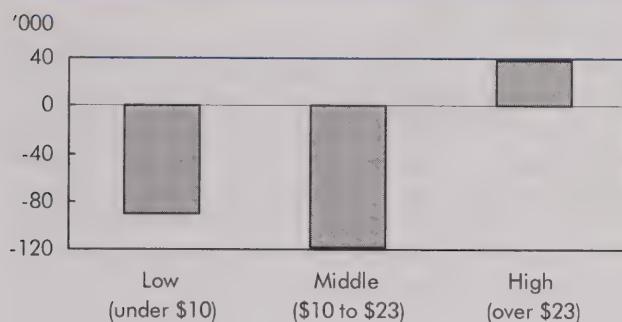
Source: Statistics Canada, Labour Force Survey, 2002 and 2007.

and motor vehicle assemblers, inspectors and testers. According to the Labour Force Survey, many of the workers who lost their jobs between 2002 and 2007 were in the middle range to lower end of the pay scale, while higher-paid machine operators and assemblers—those averaging over $23 per hour— saw an increase in their numbers over the period (Chart D). The proportion of machine operators and assemblers in manufacturing who earned over $23 per

hour increased from 14% in 2002 to 22% by 2007. Those earning less than $10 per hour dropped from 17% in 2002 to 8%. The share of those in the middle range held relatively steady at around 70%. Machine operators and assemblers earned an average of $18.37 per hour in 2007, up 3% from $17.81 (in 2007 dollars) in 2002.

While a lot of attention has focused on auto workers losing their jobs, sewing machine operators also experienced layoffs and employment declines. According to the 2006 Census, sewing machine operators experienced the fifth largest drop in numbers of all occupations between 2001 and 2006. Nearly 52,000 jobs disappeared from textile mills and clothing manufacturing between 2002 and 2007, according to the Survey of Employment, Payrolls and Hours.

In fact, many of the job losses in manufacturing over the 2002 to 2007 period occurred in textiles and clothing, which on average pay much less than transportation equipment firms. Textile and clothing businesses cut the number of employees on their payrolls by almost half. These workers were paid, on average, between $13.60 and $15.65 in 2007. Most of the job losses in transportation equipment from 2002 to 2007 were in motor vehicle parts manufacturing, where employees averaged a much higher $25.13 per hour in 2007 (Table 2). Overall, much of the employment loss in manufacturing happened at the lower end of the

Table 2 Average hourly wages for hourly paid employees in various manufacturing industries

	2002	2003	2004	2005	2006	2007
	2007 $					
Textile mills	16.31	15.92	17.54	17.63	16.87	15.65
Clothing manufacturing	12.69	12.64	14.10	13.82	14.73	13.60
Transportation equipment manufacturing	26.57	26.46	26.61	26.31	26.17	26.48
Motor vehicle manufacturing	32.61	32.99	32.11	31.38	32.25	32.49
Motor vehicle parts manufacturing	25.04	24.56	24.76	24.55	24.43	25.13
Aerospace product and parts manufacturing	24.53	24.87	26.23	26.33	25.63	26.35
Furniture and related product manufacturing	18.44	18.14	19.00	19.67	19.55	19.37
Household and institutional furniture and kitchen cabinet manufacturing	17.78	17.59	18.81	19.57	19.48	19.08

Source: Statistics Canada, Survey of Employment, Payrolls and Hours.

Chart E   In Ontario, machine operators lost jobs primarily in the mid-wage range; in Quebec, they lost jobs almost equally in the low and mid ranges
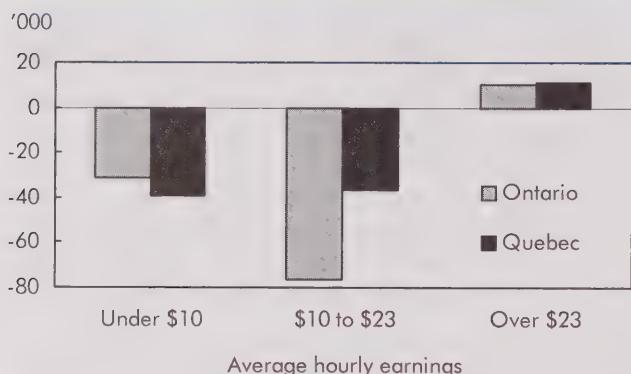
Source: Statistics Canada, Labour Force Survey, 2002 and 2007.

wage scale over the 2002 to 2007 period. Even as recently as 2006 and 2007, clothing manufacturing suffered greater employment losses than motor vehicle parts.

The situation in Ontario and Quebec

Central Canada has been at the forefront of discussions about losses in high-paying factory jobs and gains in service sector employment, especially since Ontario and Quebec account for the vast majority of the declines. Ontario experienced heavier factory losses in the mid range of the pay scale (Chart E). In the highest pay category, employment of machine operators and assemblers in manufacturing increased. In Ontario, the average hourly wage for machine operators and assemblers in manufacturing was $18.89 in 2007, a 2.0% increase from $18.53 in 2002 (in 2007 dollars, using provincial CPI). For all workers in Ontario, constant-dollar earnings grew 3.5% over the same period.

By contrast, employment for machine operators and assemblers in Quebec declined in both the mid-wage and the low-wage groups. Quebec has a high concentration of clothing manufacturing and textile workers, and this group earns less per hour than auto workers

in Ontario. In Quebec, the average hourly pay for machine operators and assemblers in manufacturing was $17.08 in 2007, an increase of 5.3% from $16.22 in 2002 (in 2007 dollars, using provincial CPI). For Quebec workers overall, real earnings increased 3.3% from 2002 to 2007.

While increases in other high-paying industries have offset manufacturing losses in Ontario, this does not mean that ex-manufacturing workers were getting these high-paying jobs. An earlier Statistics Canada study found that high-seniority men who lost their jobs between 1987 and 1997 earned 18% to 35% less five years later; their female counterparts earned 24% to 35% less (Morissette et al. 2007).

A closer look at Ontario reveals that while employment in the retail trade industry experienced a big increase from 2002 to 2007, similar gains were made in educational services. In addition, health care and social assistance, as well as finance, insurance and real estate and construction all added workers (Chart F).

By occupation, the largest increase was for other management positions, which gained 72,000 workers from 2002 to 2007, followed by clerical workers (60,000) and social science, government service and religion (55,000). Other management jobs cover a diverse range, including managers in construction, public administration and banking and telecommunications. With the exception of retail trade and clerical positions, these were jobs with above-average hourly pay. Over the same period, Ontario lost 94,000 machine operators and assemblers in manufacturing, including supervisors. Workers making between $10 and $23 per hour were hit the hardest by layoffs and plant closures, more so than those making less than $10. Workers in this occupation averaged $18.89 per hour in 2007, compared with the province's overall average of $21.27.

In Quebec, the professional, scientific and technical services industry as well as health care and social assistance and construction recruited the most workers over the 2002 to 2007 period, each outnumbering the additions to retail trade. Occupationally, machine operators suffered a loss of 65,000 in their ranks over the six years. During this time, the province saw an increase in clerical workers and wholesale, technical insurance and real estate specialists as well as sales and service occupations related to travel, accommodation,

Chart F   In Ontario, education added as many workers as retail trade between 2002 and 2007; in Quebec, retail trade trailed several industries

■ Quebec

▨ Ontario

Construction

Retail trade

Wholesale trade

Finance, insurance, real estate and leasing

Professional, scientific and technical services

Educational services

Health care and social assistance

Manufacturing

-150   -100   -50   0   50   100

Change ('000)

Source: Statistics Canada, Labour Force Survey, 2002 and 2007.

workers in the mining, oil and gas industries, and managers in primary production (excluding agriculture). Meanwhile, most of the job losses among machine operators and assemblers in manufacturing occurred in the mid and lower pay ranges. In Ontario, losses were heavy in the mid range; in Quebec, the losses were split more evenly between the low and mid ranges.

The employment declines in manufacturing from 2004 to 2007 totalled nearly 250,000. While this was not as large as the losses of the early 1990s, most of the jobs were full time. An earlier study found that high-seniority men laid off in the late 1980s to late 1990s earned less five years after being let go (Morissette et al. 2007). However, although employment increased in high-paying industries and occupations, more research is needed to determine whether ex-factory workers were able to share in these job gains.

While retail trade has added many workers, construction and health care and social assistance saw larger additions to their workforces between 2002 and 2007. The increases among other high-paying jobs may partly explain the discrepancy between increasing real earnings and disappearing manufacturing jobs. Occupations at the high end of the pay scale, such as other management positions in business, finance or government and natural and applied sciences, saw big increases. In construction and health care, workers at both the higher and lower ends of the pay scale saw increases.

sport and recreation. As in Ontario, more workers found jobs in management and social sciences, government services and religion. In addition, about the same number of teachers and professors were added as retail salespersons and clerks. Teachers in Quebec earned an average of $28.16 per hour in 2007 compared with $11.02 for retail salespersons and clerks. The average pay for machine operators and assemblers in manufacturing was $17.08, compared with $19.35 for all workers.

Summary

In recent years, industry employment trends have been interpreted by some as evidence that high-paying manufacturing jobs were being replaced by lower-paying service jobs. In fact, the jobs lost in manufacturing were not all high paying. Nor were all the gains in poor paying positions. Between 2002 and 2007, employment increased more strongly in higher-paying industries and occupations. Earnings increased rapidly for

Perspectives

Non-wage benefits

In 2005, almost three-quarters of all workers had at least some employer-provided non-wage benefits, up from just over two-thirds in 1999, according to the Workplace and Employee Survey. Non-wage benefits include supplemental medical or dental insurance, life insurance, a pension plan, or a group RRSP.

Retail trade and construction, which saw large increases in employment between 2002 and 2007, provided proportionately fewer of their workers with benefits (68% and 66% respectively, in 2005) than did manufactur-

ing (81%), but this alone does not present a complete picture. Employment also increased over the same period in industries such as education and health care and social assistance, which reported rates of non-wage benefits on a par with or higher than manufacturing (90% and 79% respectively).

In addition to pay and benefits, work arrangements can be an important dimension of quality of employment and help in attracting and retaining staff (Mollins 2008). The option of flexible, reduced or compressed

Table 3 Selected characteristics of employment in the largest gainers and losers by industry

	All industries	Manu-facturing	Cons-truction	Health care and social assistance	Retail trade	Educa-tional services	Professional, scientific and technical services
2007				%			
Men	52.7	71.6	87.9	17.5	45.2	35.0	57.8
Women	47.3	28.4	12.1	82.5	54.8	65.0	42.2
Full-time	81.8	96.1	93.1	76.2	67.1	74.2	86.6
Part-time	18.2	3.9	6.9	23.8	32.9	25.8	13.4
50 hours or more per week	9.2	4.5	18.6	5.9	2.2	4.1	11.8
Usual hours per week	36.5	39.7	41.2	34.2	31.4	32.3	37.9
Working unpaid overtime	11.4	8.8	4.9	9.3	5.6	31.5	19.3
Permanent	87.1	93.4	81.6	87.6	88.3	75.5	91.9
Temporary	12.9	6.6	18.4	12.4	11.7	24.5	8.1
Union	31.5	29.9	32.6	55.5	15.5	70.7	5.7
2005							
Working compressed week	6.9	8.4	7.0	8.9	3.4	4.4	3.8
Working flexible hours	36.6	26.5	41.4	31.7	44.9	34.2	42.0
Working reduced hours	8.0	3.7	3.0	7.7	13.2	4.8	9.9
Employees receiving classroom training	36.5	34.1	32.6	52.9	27.5	47.3	38.1

Source: Statistics Canada, Labour Force Survey 2007; Workplace and Employee Survey, 2005.

Non-wage benefits (continued)

work weeks may help workers maintain a better work-life balance. A flexible schedule means workers can vary their start and stop times as long as they work the equivalent of a full work week; a compressed schedule means longer workdays to reduce the days worked over some set period. In 2005, over one-third of workers (37%) had flexible hours (Chart G), a slight decline from 39% in 1999. In 1999, professional, scientific and technical workers had the highest share of

workers on flex hours (57%); this dropped to 42% in 2005. Many industries with major employment gains between 2002 and 2007 had a larger share of employees reporting flexible schedules in 2005 than manufacturing. Retail trade, professional, scientific and technical services, and construction all had high shares of flexible schedules. In fact, manufacturing had the lowest share of workers with flexible hours—just over a quarter in 2005.

Chart G   Flexible hours more common in many non-manufacturing industries
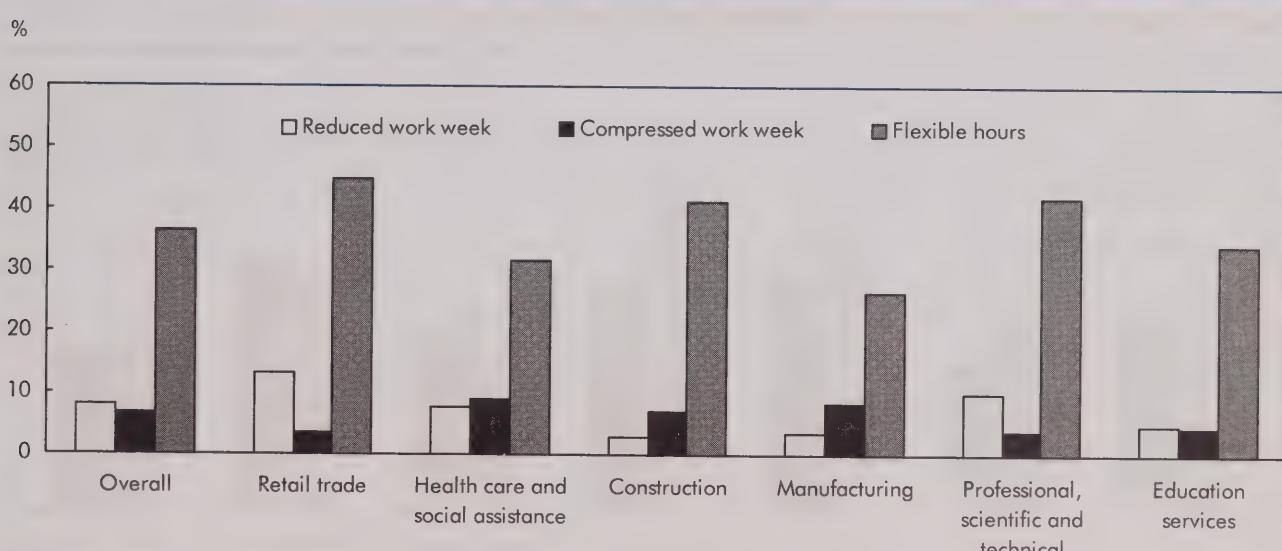
Source: Statistics Canada, Workplace and Employee Survey, 2005.

Non-wage benefits (concluded)

Training is another element of job quality. Formal classroom and informal on-the-job training can increase a worker's chances for career advancement. And for some professions, such as educational workers, medical professionals, accountants, engineers and others needing to keep current on the latest theories and practices, ongoing training is seen as part of the job. Several high-growth industries in the 2002 to 2007 period had a sizeable share of workers receiving training (Chart H). In 2005, over half (53%) of workers in health care and social assistance and nearly half (47%)

in education got formal classroom training during the previous 12 months—much more than the overall average of 37%. Retail workers were the least likely to receive classroom training (28%). Just over one in three (34%) manufacturing workers reported classroom training in 2005, only slightly more than the share of construction workers (33%), according to the latest Workplace and Employee Survey. Informal on-the-job training happens more often than classroom training only for workers in professional, scientific and technical services.

Chart H   Health care and social assistance, and education reported the most formal training
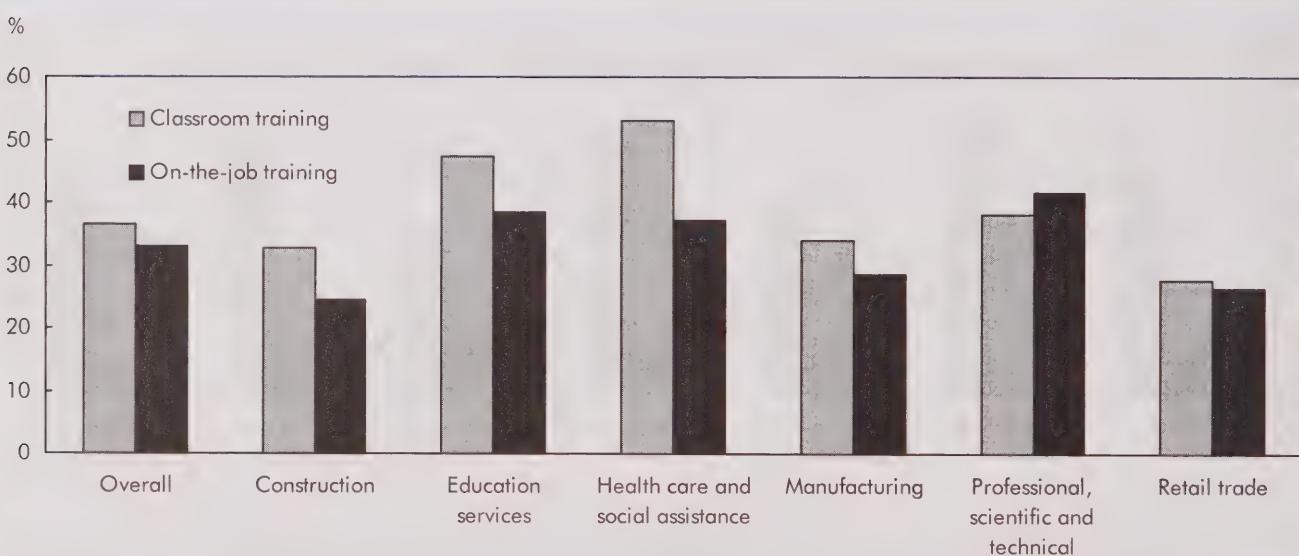
Source: Statistics Canada, Workplace and Employee Survey, 2005.

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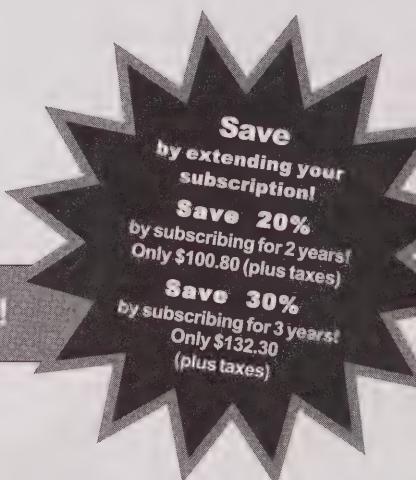
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Skilled trades employment

Wendy Pyper

> "It's all very well to talk about a knowledge-based society. There are many kinds of knowledge needed to keep the economy operating—including vocational and technical knowledge. Try running a home or a business without it." (Maxwell 2007)

Press coverage demonstrates that issues associated with employment in the trades are a concern for many in Canada. These issues include the aging of the workforce, since the often physical nature of many jobs in the trades may have more of an impact on workers. Furthermore, immigration policies and regulations regarding certification requirements also hit many occupations in the trades, not just occupations like doctors and nurses. Will the supply of tradesworkers keep up with the demands of the economy? The Business Conditions Survey for the Manufacturing Industries found that, in 2006 and 2007, the major production impediment was the shortage of skilled labour (Statistics Canada 2008c).

In addition, the issue of employment shortages in the trades has been on the minds of policymakers. The 2006 Federal Budget offered several incentives to encourage employment in the trades. The Apprenticeship Incentive Grant is a taxable cash grant of $1,000 per year, up to $2,000 per person. This grant helps cover tuition, travel and tool costs, and is meant to encourage the completion of apprenticeship programs (HRSDC 2007). The Apprenticeship Job Creation Tax Credit is a non-refundable tax credit of up to $2,000 per year (10% of the eligible salaries of apprentices) for employers who hire apprentices (CRA 2007). The Tradesperson's Tools Deduction provides an annual deduction of up to $500 to help cover the cost of the purchase of new tools for employed tradespersons (CRA 2006). Several provincial programs have also

been introduced to encourage high school students to pursue these occupations by allowing students to work towards an apprenticeship through a cooperative education placement while still in high school (Government of Ontario 2008 and Government of Alberta 2007).

This article uses the Labour Force Survey to examine employment trends in selected trade occupations over the past 20 years (see *Data source and definitions*) and looks at the socio-economic characteristics of these workers and the characteristics of the jobs they held.

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Chart A Slow but steady employment growth, but only since the mid-1990s in the trades

Source: Statistics Canada, Labour Force Survey.

Data source and definitions

The **Labour Force Survey** collects information each month on the labour market activity of the civilian, non-institutionalized population 15 years of age and over. Excluded from the survey are persons living in the territories or on reserves and full-time members of the Canadian Armed Forces. Each month, a representative sample of approximately 53,000 households is surveyed. The population used in the study also excluded students.

All differences mentioned in the text and the quality measures were tested for statistical significance using the jackknife methodology for determining the coefficients of variation.

Skilled trades commonly refer to the "type of occupation that typically includes complex activities and requires skills and account knowledge of the subject. One usually has to do one to three years of postsecondary education in a college or university (depending on the school system), or two to four years in an apprenticeship program, or two to three years of on-the-job training. A combination of these three forms of training can also allow the practice of the trade. A license or certificate may be compulsory." (Canadian Council of Directors of Apprenticeship 2007)[1]

The occupations studied are based on the **National Occupational Classification for Statistics** (NOC-S) 2001, "H – Trades, Transport and Equipment Operators and Related Occupations" (Statistics Canada 2001).[2] Eight trades were selected for this study.[3]

Plumbers, pipefitters and gas fitters (NOC-S H11)
- installing, repairing and maintaining water distribution and waste water systems in buildings, steam and hot water heating systems, liquid chemical distribution, sprinkler systems, and gas piping for appliances or manufacturing processes.
- Most are Red Seal designated.

Carpenters and cabinetmakers (NOC-S H12)
- constructing, repairing and maintaining structures made of wood or wood substitutes, and constructing and repairing wooden cabinets, furniture or fixtures.
- Red Seal designated.

Masonry and plastering trades (NOC-S H13)
- laying bricks or blocks, finishing concrete, setting clay or ceramic tiles, plastering, and drywall installation.
- Many are Red Seal designated.

Other construction trades (NOC-S H14)
- roofing, installing glass, insulating buildings against temperature extremes, painting and decorating, and installing floor coverings.
- Red Seal designated.

Stationary engineers, power station operators and electrical trades and telecommunications occupations (NOC-S H2)
- operating and maintaining boilers and other stationary engines, operating electric power generation switchboards, installing and repairing wiring systems, install-ing and repairing electrical equipment, constructing and maintaining power and telecommunications lines, and maintaining cable television services.
- Many are Red Seal designated.

Machinists, metal forming, shaping and erecting occupations (NOC-S H3)
- setting up and operating machine tools, forming and shaping sheet metal or steel plates, and erecting structural metal or platework.
- Most Red Seal designated.

Mechanics (NOC-S H4)
- installing, repairing and maintaining machinery, transportation equipment, appliances and other mechanical equipment.
- Some are Red Seal designated.

Crane operators, drillers and blasters (NOC-S H62)
- operating cranes or draglines, operating drills in open-pits and quarries, operating drills to drill water wells, and setting off explosive charges in surface mines, quarries and construction sites.
- Some are Red Seal designated.

An **apprenticeship** is a formal agreement between an **apprentice** (a person who wants to learn certain occupational skills) and an employer (who needs a skilled worker). Apprenticeship programs are administered at the provincial level and combine technical, in-school training and on-the-job learning supervised by a certified journeyperson. The length of each component is trade specific. Following this training period and the passing of an examination, apprentices receive a Certificate of Apprenticeship and a Certificate of Qualification, which allow them to be a certified journeyperson.

A **journeyperson** is a formally certified worker whose experience and training meet the requirements of their trade.

Red Seal designated trades have training and certification based on national standards, indicating interprovincial qualifications for journeypersons to work anywhere in Canada without having to write further exams (Canadian Council of Directors of Apprenticeship 2007).

The **ratio of entrants to near-retirees** is one way to examine the aging phenomenon within an occupation. In this article, entrants were defined as workers aged 25 to 34 and near-retirees as those 50 or older. The age range for entrants captures those in the early years of their careers, after most would have completed postsecondary education. An alternative definition of entrants (age 20 to 29) was also examined, with similar results—the trades were more in balance than other occupations and the ratios declined since 1987.

Steady employment growth since the mid-1990s

Some 1.1 million people were employed in the trades in 2007 (Chart A). Following declines during the late 1980s and early 1990s, employment grew an average of 2.2% per year, slightly higher than non-trades (2.0%). Throughout the period, the trades consistently accounted for 8% of total employment.

During economic downturns, building and construction projects are hit particularly hard. Indeed, during the recession of the early 1990s, the unemployment rate in the trades was substantially higher than in other occupations (Chart B).[4] In 1992, unemployment in the trades peaked at 14.3%, significantly higher than the peak in non-trades (11.1% in 1993). Since 1996, the rate has been virtually the same for trades and non-trades.

Not all trades experience the same impact from the business cycle. While the unemployment rate in each occupation peaked during the early 1990s, other construction trades, masons and carpenters had the high-

est rates, approaching 25%. This was far higher than the peak for mechanics (9.7%) and electricians (10.2%) in 1992. Although the unemployment rate gap between the various trades narrowed after the recession, their ranking remained relatively consistent. Indeed, over the past 20 years, the three occupations with the highest peaks in the early 1990s generally experienced the highest unemployment rates and the two with the lowest peaks consistently had the lowest rates.

The trades, mainly male with large entry cohorts

While men account for half of employment in non-trades occupations, they make up the vast majority in the trades (97% in 2007). Although the proportion of men in other occupations declined over the past two decades (from 54% in 1987 to 50% in 2007), in the trades men retained their strong representation.

With the aging of the workforce comes concern about whether enough younger workers will be available to replace older workers as they retire. Since fewer years of postsecondary education are generally required, the average age of those employed in the trades, 40 in 2007, was almost two years younger than for other occupations (Table 1). Plumbers, with an average age of 37, were the youngest in 2007, while crane operators were the oldest (42). Indeed, the average age in most trades was younger than in the non-trades.

Over the past two decades, the average age of those working in occupations other than the trades increased by 4 years—from 37 in 1987 to 41 in 2007—similar to the increase in the trades. But not all occupations experienced this degree of aging—the average age of carpenters increased by only 2 years.

Another way to look at the age composition of an occupation is through the ratio of entrants (age 25 to 34) to near-retirees (50 or over). When this ratio is below one, meaning fewer people in the early stages of their careers than will be

Chart B Finding work more difficult in the trades during the recession of the 1990s
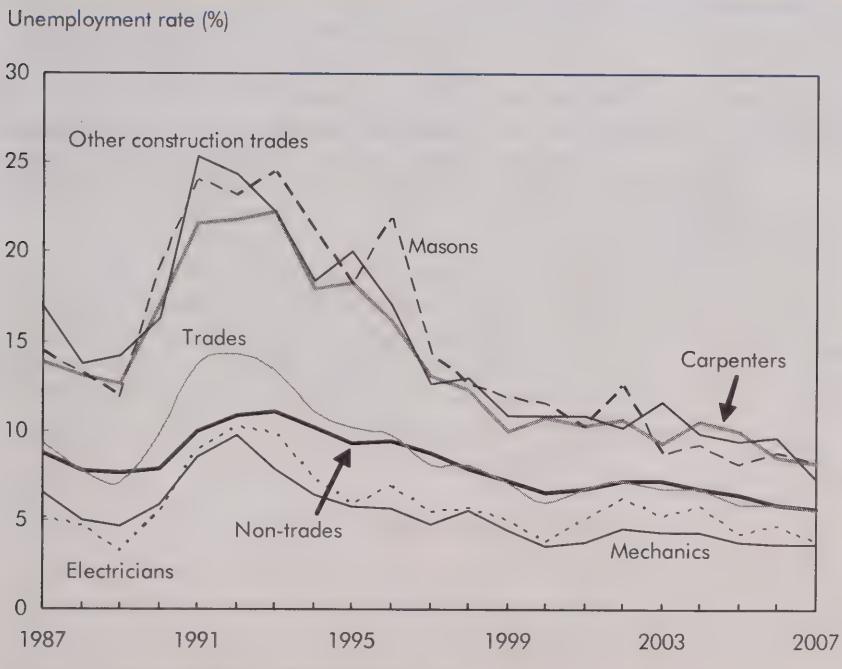
Unemployment rate (%)

Source: Statistics Canada, Labour Force Survey.

Table 1   Employment, average age and ratio of entrants to near-retirees in trades

	Employed			Average age			Entrants / near-retirees		
	1987	1997	2007	1987	1997	2007	1987	1997	2007
	'000			years			ratio		
Total	**11,416**	**12,724**	**15,518**	**37.1(*)**	**39.3 (*)**	**41.3***	**1.7*(*)**	**1.3(*)**	**0.8***
Non-trades	10,431	11,756	14,371	37.2(*)	39.4	41.4	1.6(*)	1.3(*)	0.7
Trades	985	968	1,147	36.4*(*)	39.1*(*)	39.6*	2.0*(*)	1.5*(*)	1.0*
Plumbers	50	54	70	37.7	40.0(*)	37.2*	1.7	1.1(*)	1.6*
Carpenters	132	115	148	36.8(*)	38.8	38.8*	1.5(*)	1.5(*)	1.0*
Masons	51	39	62	36.2	39.0	37.7*	1.7ᴱ	1.6ᴱ	1.5*
Other construction trades	61	65	90	34.5*(*)	37.9*	38.5*	2.1(*)	1.7(*)	1.1*
Electricians	155	152	183	36.3*(*)	39.7	40.9	2.6*(*)	1.5(*)	0.8
Machinists	185	180	203	36.7(*)	38.4*(*)	39.4*	2.0*(*)	1.6*(*)	1.1*
Mechanics	331	346	373	36.2*(*)	39.1(*)	40.3*	2.1*(*)	1.4(*)	1.0*
Crane operators	21	17	17	37.5(*)	43.5*	42.0	2.4ᴱ(*)	0.5ᴱ*	0.6ᴱ

* significantly different from the non-trades at 0.05 level or less
(*) significantly different from 2007 at 0.05 level or less
Source: Statistics Canada, Labour Force Survey.

retiring soon, it points to a potential net out-flow of workers. In 2007, the ratio for non-trades was 0.7, indicating significantly more workers nearing retirement than in the early stages of their careers. This was substantially lower than the ratio of 1.6 in 1987 and illustrates the well-known phenomenon of the baby boom generation—now approaching retirement—and the subsequent significantly smaller generation beginning their careers. However, this aging phenomenon has not affected the trades equivalently. For this group of workers, the ratio was 1.0 in 2007, indicating a demographic balance between young and older workers, with a steep decline since 1987 when twice as many were entrants as near-retirees.[5] Some trades, like plumbing and masonry, had substantially more entrants than near-retirees in 2007 (1.6 and 1.5 respectively). This indicates a continued strong presence of young blood in many trades. The exceptions in 2007 were electricians (0.8) and crane operators (0.6), whose ratios were similar to non-trades occupations.

Majority in the trades had some postsecondary education

Many jobs in the trades require formal training past high school, such as trade certificates or diplomas. Provincially administered apprenticeship programs combine on-the-job learning and formal training.[6] For example, in Alberta, the electrician apprenticeship program lasts four years and requires on-the-job training (1,500 hours annually in the first three years and 1,350 in the fourth) plus in-class training (8 weeks per year in the first three years and 12 weeks in the fourth) (Government of Alberta 2004). Almost 7 in 10 workers in the trades in 2007 had at least some postsecondary education, most below the bachelor's level (63%) (Table 2). While an equivalent proportion of workers in other occupations also had at least some postsecondary education, far more had achieved degrees at the bachelor's level or higher (26%). The well-known increase in education levels seen across all occupations was also seen in the trades—about half had some postsecondary education in 1990, compared with 68% in 2007.

About 8 in 10 plumbers and electricians had postsecondary education, well above the national average. This reflects the requirements set out in the provincial certification programs. Not all trades are subject to such strict educational requirements—only 4 in 10 masons and other construction trades had at least some formal education following high school.

A shift to the West

The boom in the oil and gas industry and the accompanying construction boom have helped spur both economic and employment growth in the two westernmost provinces. While 10% of all non-trades employment was located in Alberta in 1987, this increased to 12% in 2007 (11% and 13% respectively

Table 2   Highest level of education of workers in the trades

	Postsecondary below bachelor's				Bachelor's degree or above		
	1990	1997	2007		1990	1997	2007
				%			
Total	**36*(*)**	**42*(*)**	**44***		**15*(*)**	**19*(*)**	**24***
Non-trades	35(*)	41(*)	42		16(*)	20(*)	26
Trades	48*(*)	60*(*)	63*		2*(*)	3*(*)	5*
Plumbers	59*(*)	76*	76*		F	F	3 E*
Carpenters	36(*)	47*	51*		2E*(*)	3E*	4*
Masons	23*(*)	31*	35*		F	F	5 E*
Other construction trades	27*(*)	36*	36*		F	3 *	5*
Electricians	65*(*)	73*	74*		2E*(*)	4*(*)	7*
Machinists	45*(*)	62*(*)	66*		2E*(*)	2E*(*)	4*
Mechanics	53*(*)	65*(*)	69*		1E*(*)	2*(*)	4*
Crane operators	20*(*)	35(*)	51		F	F	F

* significantly different from the non-trades at 0.05 level or less
(*) significantly different from 2007 at 0.05 level or less
Source: Statistics Canada, Labour Force Survey.

for British Columbia). However, the growth in these provinces affected the trades even more. In 1987, 9% of all trades employment was found in Alberta—by 2007, this increased to 15% (11% and 15% respectively for British Columbia). This is in sharp contrast to the other provinces. For example, coinciding with the decline in manufacturing, the proportion of tradesworkers in Ontario was 36% in 2007, down significantly from 41% in 1987.

Although over one-third of all trades jobs were in Ontario in 2007, machinists and masons were over-represented (both at 39%) and carpenters were under-represented (28%) (Table 3). Fully one-quarter of Canada's mechanics lived in Quebec, a higher proportion than for other trades. In keeping with the strength of Alberta's oil and gas sector, nearly one in four persons employed as plumbers, pipefitters and gas fitters worked in Alberta in 2007.

Table 3   Provincial distribution of trades employment

	Newfound-land and Labrador	Prince Edward Island	Nova Scotia	New Bruns-wick	Quebec	Ontario	Manitoba	Saskat-chewan	Alberta	British Columbia
						%				
Total	**1.3**	**0.4**	**2.7**	**2.2**	**22.7**	**39.0**	**3.5**	**3.0**	**11.8***	**13.4**
Non-trades	1.3	0.4	2.7	2.2	22.8	39.2	3.5	3.0	11.5	13.3
Trades	1.5*	0.4	2.5	2.2	21.6*	35.6*	3.4	3.1	15.0*	14.7*
Plumbers	1.3E	0.5E	3.2	2.3	12.6*	34.7	2.3E*	3.8	23.5*	15.8
Carpenters	2.2*	0.6*	3.4	2.0	24.8	27.8*	3.2	2.8	13.8*	19.4*
Masons	1.1E	F	2.2E	1.9E	18.1*	39.0	3.4E	F	16.2*	15.9
Other construction trades	1.2E	0.5E	2.2	2.2E	18.0*	35.1*	3.2	2.8	17.0*	17.8*
Electricians	1.9*	0.4	2.8	2.9*	19.0*	38.3	3.7	3.2	14.6*	13.3
Machinists	1.2	0.3	1.7*	1.7*	19.5*	39.2	3.6	3.3	18.2*	11.3*
Mechanics	1.2	0.4	2.5	2.3	26.2*	34.6*	3.6	3.3	11.7	14.2
Crane operators	F	F	F	F	13.9E*	47.0	3.3E	3.4E	12.8E	13.7E

* significantly different from the non-trades at 0.05 level or less
Source: Statistics Canada, Labour Force Survey, 2007.

Table 4 Tradesworkers by immigrant status

| | Canadian-born | Immigrants | | |
		Total	10 or more years ago	Less than 10 years ago
			%	
Total	**79.0**	**21.0**	**72.1**	**27.9**
Non-trades	78.6	21.4	72.0	28.0
Trades	83.0*	17.0*	73.7	26.3
Plumbers	90.0*	10.0*	83.2*	16.8ᴱ*
Carpenters	85.7*	14.3*	73.0	27.0
Masons	74.6	25.4	60.7*	39.3*
Other construction trades	83.3*	16.7*	67.5	32.5
Electricians	85.2*	14.8*	73.7	26.3
Machinists	77.5	22.5	80.4*	19.6*
Mechanics	83.9*	16.1*	72.2	27.8
Crane operators	83.8	16.2ᴱ	84.4	F

* significantly different from the non-trades at 0.05 level or less
Source: Statistics Canada, Labour Force Survey, 2007.

Fewer immigrants employed in the trades

Recent immigrants are much likelier than the Canadian-born to have a university degree (Galarneau and Morissette 2004). Indeed, 51% of those arriving between 2001 and 2006 had a university degree, far higher than the 20% for the Canadian-born population (Statistics Canada 2008a). Since the educational requirements of jobs in trades are below university level, one might expect fewer immigrants to be working in the trades. According to the 2007 Labour Force Survey, 17% of workers in the trades were immigrants, significantly lower than the 21% in the non-trades occupations (Table 4).[7] None of the trades had a higher proportion of immigrants than the non-trades. Plumbers were the least likely to be immigrants (10%).

In terms of time residing in Canada, 4 in 10 immigrant masons had arrived in Canada in the past 10 years, significantly more than immigrants working in the non-trades occupations (28%). About 1 in 5 employed masons had immigrated within the previous five years, compared with only 1 in 8 of those in non-trades occupations. Immigrant plumbers and machinists were less often recently arrived (17% and 20% respectively).

Table 5 Job characteristics of tradesworkers

| | Usually worked 50 or more hours per week | | | Multiple job holder | | | Unionized[1] | | Permanent[1] | |
	1987	1997	2007	1987	1997	2007	1997	2007	1997	2007
						%				
Total	**14.1***⁽*⁾	**13.7**⁽*⁾	**11.7**	**4.0**⁽*⁾	**5.1**	**5.2***	**35.0***⁽*⁾	**32.7***	**89.8**⁽*⁾	**88.9**
Non-trades	14.6⁽*⁾	13.9⁽*⁾	11.8	4.1⁽*⁾	5.3	5.4	34.0⁽*⁾	31.8	89.8⁽*⁾	88.8
Trades	8.7*⁽*⁾	10.6*	10.3*	3.0*⁽*⁾	3.1*⁽*⁾	2.5*	47.0*⁽*⁾	43.8*	90.0	90.3*
Plumbers	7.6*⁽*⁾	11.2*	12.6	2.1ᴱ*	2.0ᴱ*	1.9ᴱ*	59.7*	54.1*	83.2*	84.2*
Carpenters	11.7*	16.2*⁽*⁾	11.9	2.7*	3.2*⁽*⁾	2.2*	32.6⁽*⁾	39.1*	75.0*⁽*⁾	83.1*
Masons	11.0*⁽*⁾	14.7	15.9*	3.4ᴱ	2.4ᴱ*	1.6ᴱ*	46.0*	45.7*	76.3*	77.0*
Other construction trades	12.4⁽*⁾	12.6⁽*⁾	16.2*	2.7ᴱ*	3.5ᴱ*	2.8*	32.0	32.0	77.8*	78.6*
Electricians	5.0*⁽*⁾	6.2*	6.7*	3.2*	2.9*	2.6*	70.0*⁽*⁾	63.1*	91.8*	90.3*
Machinists	6.5*⁽*⁾	7.3*⁽*⁾	9.3*	2.9*	2.4 *	2.4*	47.5*⁽*⁾	41.8*	92.4*	91.8*
Mechanics	9.6*	11.5*⁽*⁾	9.1*	3.2*	3.6 *	2.8*	38.5*⁽*⁾	35.5*	95.3*⁽*⁾	96.5*
Crane operators	9.4ᴱ*	10.5*	13.9	F	3.3ᴱ	F	70.8*	63.5*	88.1	88.1

* significantly different from the non-trades at 0.05 level or less
⁽*⁾ significantly different from 2007 at 0.05 level or less
1. Employees only.
Source: Statistics Canada, Labour Force Survey.

Full-time jobs more common in the trades

The vast majority of workers in the trades worked full time (97% in 2007).[8] Those in other construction trades had the lowest proportion of full-time workers in 2007 (92%). Perhaps due to the full-time nature of most jobs in the trades, very few tradespeople held multiple jobs—only 2.5% in 2007 compared with 5.4% for other occupations (Table 5).

While the proportion of non-trades workers usually working long hours (50 or more per week) declined over the past 20 years, among plumbers, masons, electricians, machinists and other construction trades the proportion increased. In 2007, one in six masons and those in other construction trades worked 50 or more hours per week.

Self-employment, especially solo, growing in the trades

While it may be a common perception that tradesworkers often run their own business or work independently, in 2007 they were self-employed slightly less often than workers in other occupations (15% and 16% respectively) (Table 6). The self-employed can either have employees or work on their own (with perhaps unpaid help from a family member). A much higher proportion of the self-employed in the trades were without employees (92% in 2007) than those in other occupations (65%).

Self-employment varied substantially by trade. Electrical, telecommunications and stationary engineers and machinists were the least likely to be self-employed (7%); those in other construction trades were the most likely (39%), followed by masons and plasterers, and carpenters and cabinetmakers (32% and 25% respectively). In each trade, very few had employees.

Over the past two decades, self-employment has increased at a higher rate in the trades than in other occupations. In 1987, only 9% of tradespersons were self-employed, compared with 15% in 2007, an increase of nearly 60%. This contrasts with the relative stability in other occupations. The growth in the proportion of the self-employed varied by occupation. The two occupations with very low rates in 1987 (electrical and machinists) experienced a doubling of their self-employment rates. Despite these large gains, their rates were still much lower than in occupations outside trades. Among the self-employed, the proportion without employees increased significantly. For example, among self-employed carpenters, fully 94% did not have employees in 2007, compared with 75% in 1987.

Unionization strong in the trades

Unionized workers generally earn higher wages than non-unionized workers—even after adjusting for personal, job and workplace characteristics, unionized construction workers had the largest wage premium (Fang and Verma 2002). Other benefits include employer-sponsored pension plans, dental and medical plans and accessibility to a grievance or dispute settlement system (Akyeampong 2002 and Akyeampong 2003). Nearly half of employees in trades were unionized, compared with less than a third in other occupations (Table 5). Indeed, in three groups—crane operators, electricians and plumb-

Table 6 Self-employment in the trades

	Self-employed			Self-employed without employees		
	1987	1997	2007	1987	1997	2007
			%			
Total	**13.6(*)**	**17.2(*)**	**16.3**	**52.9*(*)**	**63.3*(*)**	**66.5***
Non-trades	14.1(*)	17.5(*)	16.4	51.1(*)	61.9(*)	64.7
Trades	9.2*(*)	14.0*	14.5*	81.9*(*)	83.8*(*)	91.9*
Plumbers	7.0E*(*)	16.9	12.1*	90.4*	79.1*	88.0*
Carpenters	20.2*(*)	35.8*(*)	25.3*	74.9*(*)	88.2*(*)	93.7*
Masons	20.6*(*)	34.3*	31.6*	78.3*(*)	83.2*(*)	92.4*
Other construction trades	28.1*(*)	36.2*	39.2*	97.2*(*)	85.3*(*)	92.6*
Electricians	3.1E*(*)	5.6*	6.8*	83.2*	80.5*	90.2*
Machinists	2.9E*(*)	3.0*(*)	7.4*	72.2*	78.9*	87.2*
Mechanics	6.8*(*)	9.6*	10.0*	81.3*(*)	81.1*(*)	92.2*
Crane operators	F	F	F	F	F	F

* significantly different from the non-trades at 0.05 level or less
(*) significantly different from 2007 at 0.05 level or less
Source: Statistics Canada, Labour Force Survey.

ers—the majority of employees were union members. Employees in other construction trades were the least unionized, with a rate of 32%, the same rate as outside the trades.

Another indication of job quality is job permanency, as temporary jobs generally have lower pay, fewer benefits and less opportunity for on-the-job training (Galarneau 2005).[9] Overall, 9 in 10 tradespersons held permanent jobs. In some of these occupations, permanency was even higher, reaching over 95% for mechanics. This is in sharp contrast to masons and those in other construction trades (77% and 79% respectively).

Higher wages, but only for some trades

In 2007, employees in the trades averaged $22.36 in hourly earnings, 6% higher than the $21.02 for other occupations (Table 7). The highest earners were electricians ($25.26), crane operators ($24.61) and plumbers ($24.10). These occupations had the highest unionization rates and high job permanency rates. In contrast, trades with lower averages—other construction trades ($19.24) and carpenters ($20.43)—had substantially lower unionization rates (32% and 39% respectively).

Between 1997 and 2007, employees outside the trades saw greater increases in their average constant-dollar hourly earnings than those in the trades—7.4% compared with 3.5%. The only trade surpassing the non-trades group was carpenters, with an increase of just over 8%. These employees had a relatively low unionization rate (39%) in 2007. Most trades experienced virtually no increase in real earnings between 1997 and 2007, with the exception of carpenters, machinists and mechanics.

Summary

Widespread concerns have been expressed over the potential supply of workers in the trades. Various government policies have been introduced to encourage and support workers in these occupations.

In 2007, just over 1 million people worked in the eight selected trades studied. Following declines in the late 1980s and early 1990s, employment growth in these occupations virtually matched that of other occupations. The trades have consistently made up 8% of total employment, indicating that their employment changes through the most recent business cycle mirror those of other workers. Over the past 10 years, unemployment rates have been virtually the same for the trades and other occupations. However, their peaks during the recession of the early 1990s were significantly higher than for other occupations.

Economic growth in the two westernmost provinces had a strong impact on the trades. In 1987, less than 20% of all trades employment was found in these two provinces; twenty years later it reached nearly 30%. Over the same period, non-trade employment went from 21% to 25%.

Self-employment, particularly without employees, is a growing phenomenon among tradespersons. In 1987, only 9% of tradesworkers were self-employed; by 2007, this increased to 15%. Some trades, including electricians and machinists, saw even higher growth rates—although their self-employment rates remained lower than for non-trades occupations.

Most trades had higher unionization rates than the overall rate for other occupations, and while tradespersons had higher-than-average earnings, over the past decade increases in the trades have not kept up with other occupations. Indeed, their overall increase was roughly half that of the non-trades workers and only three trades saw greater earnings increases between 1997 and 2007 (carpenters, machinists and mechanics).

Table 7 Average hourly earnings for trades employees

	1997	2007
	2007$	
Total	**19.73*(*)**	**21.12**
Non-trades	19.57(*)	21.02
Trades	21.60*(*)	22.36*
Plumbers	24.06*	24.10*
Carpenters	18.90*(*)	20.43*
Masons	21.14*	21.23
Other construction trades	18.56*	19.24*
Electricians	24.99*	25.26*
Machinists	21.24*(*)	22.07*
Mechanics	20.86*(*)	21.89*
Crane operators	23.67*	24.61*

* significantly different from the non-trades at 0.05 level or less
(*) significantly different from 2007 at 0.05 level or less
Source: Statistics Canada, Labour Force Survey.

Finally, the average age of those working in the trades was under 40 in 2007—slightly younger than other workers (41). The aging of the population had a similar effect on both trades and non-trades—with the average age increasing by about 4 years over the past two decades. A look at the ratio of entrants (age 25 to 34) to near-retirees (50 or older) indicates that workers in the trades were in fact more in balance in 2007 than those in other occupations (1.0 versus 0.7).

Perspectives

Notes

1. Some provinces have programs that allow experienced tradespersons the opportunity to illustrate that they have sufficient skills and experience to meet provincial standards. Alberta's Qualification Certificate Program sets out specific requirements (hours of work experience, successful completion of exams and payment of fees) that, when fulfilled, allow workers to become certified workers in their trade (Government of Alberta n.d.).

2. The comparison group includes all occupations other than the eight specified trades.

3. Skilled trades can be further divided into four categories based on the dominant industry—construction, transportation, manufacturing and service (Skills Canada and Canadian Apprenticeship Forum n.d.). In an effort to focus this study on a more homogeneous population, the trades in the service sector were not included. Occupations from that group include horticulturalists, chefs and florists and are distinctly different in terms of job demands and personal and job characteristics of the workers.

4. For those not currently employed, occupation is based on their most recent job in the previous 12 months (Statistics Canada 2008b).

5. Many non-demographic factors also influence labour supply and demand. For example, strong demand in a local labour market could lead to a shortage despite a balance in the demographic ratio.

6. The Registered Apprenticeship Information System provides details on apprenticeship programs in New Brunswick, Ontario and Alberta (Morissette 2008). It gathers information on individuals who receive training and obtain certification within a trade. Being longitudinal, it provides measures of program completion and documents the various paths through the programs.

7. This was the first year that immigration status was collected in the Labour Force Survey.

8. This is at least partially related to the high proportion of men in the trades.

9. Permanent jobs have no predetermined end date.

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Interprovincial mobility and earnings

André Bernard, Ross Finnie and Benoît St-Jean

Interprovincial migration is an important component of the demographic profiles of the provinces. It affects not only the size but also the composition of their populations and directly affects both demand for public services and tax revenues. It is related to a variety of more specific human resource issues such as public investment in education and job training, since interprovincial migrants tend to be more educated and more highly skilled (Dion and Coulombe 2008) (Coulombe and Tremblay 2006). For provinces with lower demographic growth, the issue of interprovincial migration is of particular importance. Demographic growth has been very uneven provincially, ranging from a decline of 1.5% in Newfoundland and Labrador to a growth of 10.6% in Alberta between 2001 and 2006.[1] Interprovincial migration is a key concern for provinces with low birth rates, struggling to attract a sizeable share of immigrants.

For individuals—especially those in the labour force—interprovincial migration often provides an opportunity to access other labour markets and get a better job with better pay. From a national perspective, interprovincial mobility is desirable when workers from provinces with high unemployment move to provinces with labour shortages. These flows can significantly increase employment levels and therefore reduce the number of people receiving transfer payments like Employment Insurance (EI) benefits.

The recent literature[2] suggests that interprovincial mobility has many advantages in terms of national economic performance but that it tends to increase inequalities between provinces.[3] It has a large and positive effect on aggregate production in Canada because it leads to an increase in overall employment and to an economically efficient re-allocation of workers from provinces with lower productivity to provinces with

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Table 1   Annual mobility rates, persons age 20 to 54

	1992 to 1993	1996 to 1997	1999 to 2000	2002 to 2003	2003 to 2004
			%		
Out-migration	1.1	1.1	1.0	0.9	0.9
Newfoundland and Labrador	2.3	3.7	2.7	2.1	2.5
Prince Edward Island	3.6	2.9	2.8	2.0	2.1
Nova Scotia	2.2	2.4	2.1	1.9	1.9
New Brunswick	1.9	2.2	2.0	1.7	1.7
Quebec	0.5	0.6	0.5	0.4	0.4
Ontario	0.8	0.7	0.6	0.6	0.6
Manitoba	1.8	2.1	1.7	1.4	1.5
Saskatchewan	2.7	2.4	2.7	2.0	2.1
Alberta	2.1	1.7	1.7	1.8	1.7
British Columbia	1.2	1.5	1.5	1.2	1.1
In-migration	1.1	1.1	1.0	0.9	0.9
Newfoundland and Labrador	1.4	1.4	1.7	2.5	1.6
Prince Edward Island	3.1	2.4	2.8	2.1	2.1
Nova Scotia	2.1	2.0	2.0	1.9	1.7
New Brunswick	1.6	1.6	1.6	1.6	1.6
Quebec	0.4	0.3	0.3	0.3	0.3
Ontario	0.7	0.8	0.8	0.5	0.5
Manitoba	1.4	1.3	1.3	1.2	1.2
Saskatchewan	1.8	1.9	1.5	1.6	1.4
Alberta	2.2	3.3	2.5	2.1	2.2
British Columbia	2.4	1.5	1.3	1.4	1.5
Net migration	0.0	0.0	0.0	0.0	0.0
Newfoundland and Labrador	-0.9	-2.3	-1.0	0.4	-0.9
Prince Edward Island	-0.5	-0.5	0.0	0.1	0.0
Nova Scotia	-0.1	-0.4	-0.1	0.0	-0.2
New Brunswick	-0.3	-0.6	-0.4	-0.1	-0.1
Quebec	-0.1	-0.3	-0.2	-0.1	-0.1
Ontario	-0.1	0.1	0.2	-0.1	-0.1
Manitoba	-0.4	-0.8	-0.4	-0.2	-0.3
Saskatchewan	-0.9	-0.5	-1.2	-0.4	-0.7
Alberta	0.1	1.6	0.8	0.3	0.5
British Columbia	1.2	0.0	-0.2	0.2	0.4

Source: Statistics Canada, Longitudinal Administrative Data.

higher productivity (Sharpe and Ershov 2007).[6] On the other hand, interprovincial migration tends to increase provincial skills disparities (Coulombe and Tremblay 2006) and leads to a redistribution of human capital from poorer to richer provinces (Coulombe 2006). While personal characteristics are significant predictors of migration probability (for example, younger individuals, immigrants and Aboriginal people are more likely to migrate), the effects of these characteristics vary by destination (Dion and Coulombe 2008).[7]

The longitudinal databank used in this study allows the analysis of a host of pre- and post-move characteristics (see *Data source and definitions*). This paper investigates the factors prior to migration that affect the probability of moving and, in particular, the effect, if any, of initial labour-related factors (earnings and receipt of social assistance or EI benefits) or environmental factors (like the unemployment rate in the year prior to the

move) on the decision to migrate. It then compares the labour market gains of migrants and non-migrants.

Previous papers using the same databank for the years 1982 to 1995 concluded that interprovincial migration was positively related to the provincial unemployment rate and more common among individuals with low earnings or receiving social assistance or EI benefits, and that interprovincial mobility was associated with significant and sometimes substantial increases in earnings (Finnie 1999, 2001 and 2004). This paper updates and expands the analysis with more recent data (to 2004).

Migration rates vary widely by province

On an annual basis, relatively few people move from one province to another. From 1993 to 2004, the annual migration rate for those age 20 to 54 never exceeded 1.1% (Table 1). What's more, the migration rates seem to be declining since the late 1990s and the migration rate for 2004 (0.9%) was the lowest recorded for the whole period. This is consistent with a recent study that showed, using the censuses from 1971 to 2006, a general downward trend in mobility rates—whether a change of address, a change of municipality or a change of province was used as the measure (Dion and Coulombe 2008)—although more recent annual data suggest that interprovincial migration rates have started to rise again (Milan and Martel 2008).

The rates vary widely by province and some provinces are faced with particularly high out-migration. Newfoundland and Labrador, Prince Edward Island and Saskatchewan generally had the high-

Table 2   The patterns of interprovincial mobility, persons age 20 to 54

	Newfound-land and Labrador	Prince Edward Island	Nova Scotia	New Bruns-wick	Quebec	Ontario	Manitoba	Saskat-chewan	Alberta	British Columbia
					Residence in 2004					
Residence in 1992					%					
Newfoundland and Labrador	86.5	0.2	1.9	0.7	0.2	5.1	0.2	0.1	4.0	1.0
Prince Edward Island	0.4	89.4	2.7	1.7	0.6	2.7	0.1	0.1	1.6	0.8
Nova Scotia	0.5	0.4	90.1	1.4	0.5	3.9	0.2	0.1	1.8	1.2
New Brunswick	0.2	0.3	1.6	91.2	1.4	2.9	0.2	0.1	1.4	0.7
Quebec	0.0	0.0	0.1	0.1	97.4	1.8	0.0	0.0	0.2	0.3
Ontario	0.1	0.1	0.3	0.2	0.7	96.4	0.2	0.1	0.7	1.2
Manitoba	0.0	0.0	0.2	0.1	0.2	2.5	90.1	1.1	3.1	2.7
Saskatchewan	0.0	0.0	0.1	0.1	0.2	1.3	1.1	87.5	7.2	2.6
Alberta	0.1	0.0	0.3	0.2	0.3	2.0	0.5	1.1	91.2	4.4
British Columbia	0.1	0.0	0.2	0.1	0.3	1.7	0.4	0.5	3.6	93.3

Source: Statistics Canada, Longitudinal Administrative Data.

est out-migration rates while Quebec and Ontario had the lowest migration rates.[8] High (low) out-migration rates were often associated with high (low) in-migration rates. For example, Newfoundland and Labrador, Prince Edward Island and Saskatchewan also consistently recorded in-migration rates above the national average. However, in-migration rates were generally not sufficiently high to mitigate the impact of out-migration.

Although in relative terms interprovincial migration is much less frequent in Quebec and Ontario, in absolute terms, the picture is different. A total of 158,450 individuals between the ages of 20 and 54 changed provinces between 2003 and 2004, including a combined 21,050 who migrated out of the three provinces with the largest out-migration rates (Newfoundland and Labrador, Prince Edward Island and Saskatchewan). The latter number is much lower than the number of people who left Ontario (39,800), although it is higher than the number of people who left Quebec (15,400).

Over the period 1993 to 2004, Alberta was the only province to consistently record net migration gains. British Columbia recorded small losses in the late 1990s and early 2000s, a time when its economy was not growing as fast as in the rest of the country. Ontario recorded net losses except for small-to-moderate net gains between 1997 and 2002. With few exceptions, other provinces consistently recorded net losses from 1993 to 2004.

Longer-term migration patterns further illustrate the difficulties experienced by some provinces in retaining population. In Newfoundland and Labrador, only 87% of the 1992 population was still living there in 2004 (Table 2).[9] The other three Atlantic provinces and Saskatchewan also experienced low retention rates. In contrast, 97% of people in Quebec and 96% of those in Ontario in 1992 were still living in their respective provinces 12 years later.

To which provinces migrants go depends largely on the area from which they come. Although proximity is obviously a factor, migrants do not necessarily choose provinces close to their own. Rather, migration patterns seem to be driven to a large extent by economic opportunities. Ontario and Alberta, the country's two richest provinces over the study period, were generally the preferred destinations. For example, migrants from Atlantic Canada were more likely to move to Ontario than anywhere else, with the exception of those from Prince Edward Island, who were slightly more likely to move to Nova Scotia. Migrants from Manitoba, Saskatchewan and British Columbia were more likely to move to Alberta and those from Alberta were more likely to move to British Columbia. Most Quebecers who migrated moved to Ontario, although a sizeable proportion chose to go to Alberta or British Columbia.

Table 3   Longitudinal mobility profiles, persons age 20 to 54

	No moves	Single move	Multiple moves	Move and return
	%			
Canada	**93.7**	**4.0**	**0.4**	**2.1**
Newfoundland and Labrador	83.2	9.3	1.3	6.8
Prince Edward Island	87.2	7.0	1.2	5.0
Nova Scotia	88.0	6.8	1.1	4.4
New Brunswick	89.4	5.9	1.0	3.9
Quebec	96.7	2.1	0.1	1.1
Ontario	95.7	2.7	0.2	1.4
Manitoba	88.9	7.3	0.9	3.1
Saskatchewan	85.3	9.5	1.0	4.7
Alberta	89.4	6.7	0.5	3.6
British Columbia	92.4	5.0	0.4	2.2

Source: Statistics Canada, Longitudinal Administrative Data, 1992 to 2004.

One-third of interprovincial migrants return to province of origin

Longitudinal migration profiles allow migration patterns to be decomposed between moves that appear to be permanent and those that are temporary. Indeed, a significant minority of migrants eventually returns to the province of origin. Overall, 94% of people did not change their province of residence between 1992 and 2004, while 4% moved only once, 2% moved but eventually returned, and a small fraction moved more than once without returning to the province of origin (Table 3). In other words, about a third of all interprovincial migrants returned to the province of origin. Provinces with high out-migration rates were typically those with the highest proportions of returnees. For example, Newfoundland and Labrador had the highest rate of moves with a return (7%), followed by Prince Edward Island (5%). These two provinces also had the highest out-migration rates. Men and women showed virtually no difference in their longitudinal moving patterns.

Personal characteristics important in migration decision

Personal and labour market characteristics are two important sets of factors that may influence the decision to migrate. One way to investigate their effects is to quantify the extent to which each increases or decreases the probability of migrating, all other factors constant (see *Identifying factors behind migration*).

Identifying factors behind migration

To investigate factors that may influence a person's probability of moving to another province in any given year, a logistic regression model was used, with the probability of moving taken to be a function of variables representing basic personal and labour market characteristics. These include province of residence, language, population of the area of residence, type of family and presence of children, earnings, provincial unemployment rate, receipt of social assistance or Employment Insurance benefits, immigrant status and years since arrival, and a series of calendar-year variables to take into account the business cycle and general migration trends.[10] Separate regressions were run for eight age-sex groups.

As might be expected, younger individuals were much more likely to move than older people (Tables 4 and 5). For example, the probability of moving for those between the ages of 20 and 24 was close to five times higher than for those between 45 and 54. Young individuals are much more likely to experience events such as starting or finishing a postsecondary program, changing jobs or marrying, all of which often involve migration (Dion and Coulombe 2008).

Even after controlling for all other characteristics, individuals in Quebec and Ontario were much less likely to move than those in any other province. Individuals in the Prairie provinces and British Columbia had a probability of moving two to five times higher than those in Ontario. Individuals in Saskatchewan in particular had a very high probability of moving. Interestingly, after controlling for all other observable characteristics, including the provincial unemployment rate, people in Newfoundland and Labrador were not much more likely to migrate than those living in Ontario. This suggests that the very high out-migration rates recorded for Newfoundland and Labrador were mostly the result of a combination of characteristics as opposed to merely a provincial effect.

The interaction of language and province of residence seems to play a very important role in the probability of moving. In particular, English-speaking Quebecers were up to ten times more likely to move than other Canadians. This contrasts with the very low migration rates in general for people living in Quebec, suggesting that Francophone Quebecers were substantially less likely to leave their province than other Canadians. French-speaking individuals living outside Quebec were up to three times more likely to move than other

Table 4 Logistic regression for the probability of interprovincial migration for men

Age	20 to 24	25 to 34	35 to 44	45 to 54
	change in probability from baseline (%)			
Province				
Ref. - Ontario				
Newfoundland and Labrador	177.5*	64.4*	21.5*	45.4*
Prince Edward Island	131.9*	75.1*	30.5*	48.9*
Nova Scotia	181.8*	153.5*	130.5*	93.5*
New Brunswick	104.9*	55.8*	40.7*	21.9*
Quebec	-70.2*	-68.1*	-69.0*	-71.8*
Manitoba	208.3*	239.4*	275.5*	233.4*
Saskatchewan	400.7*	371.1*	367.1*	342.6*
Alberta	195.1*	231.8*	254.2*	253.9*
British Columbia	112.9*	115.1*	107.3*	93.4*
Minority language				
Ref. - all other				
English in Quebec	647.0*	726.2*	882.5*	935.6*
Francophone outside Quebec	105.2*	210.8*	206.5*	200.9*
Area of residence				
Ref. - 500,000 and over				
100,000 to 499,999	2.4*	2.4*	11.7*	14.0*
30,000 to 99,999	18.0*	7.1*	17.4*	22.9*
15,000 to 29,999	31.5*	17.4*	23.7*	23.1*
1,000 to 14,999	12.9*	5.0*	11.1*	7.2*
Rural area	-7.5*	-22.9*	-18.8*	-8.1*
Family type				
Ref. - married with children				
Married, no children	11.2*	35.5*	27.3*	20.3*
Lone parent	1.9	14.1*	24.4*	27.4*
Single	72.9*	79.9*	62.2*	86.1*
Earnings				
Ref. - $25,000 to $50,000				
No earnings	1.0	28.0*	61.7*	73.5*
$1 to $25,000	22.0*	18.0*	34.0*	44.0*
$50,000 to $100,000	-6.5*	14.4*	36.2*	21.6*
Over $100,000	18.8	18.3*	96.6*	115.0*
Unemployment rate[1]	9.6*	10.5*	11.4*	9.4*
Social assistance[2]	9.9*	20.0*	29.6*	15.1*
Employment insurance[2]	-0.1	7.6*	30.5*	50.2*
Years since immigration				
Ref. - non-immigrant				
One	-3.5	21.8*	89.5*	121.9*
Two	-19.2*	35.8*	112.4*	104.4*
Three	-30.6*	12.2*	68.4*	92.6*
Four	-37.3*	1.1	54.6*	53.2*
Five	-30.6*	-7.4*	41.5*	51.4*
Six	-39.0*	-13.3*	39.5*	27.9*
Seven	-35.3*	-18.0*	12.6*	31.3*
Eight	-35.2*	-26.0*	9.2*	20.1*
Nine	-40.7*	-26.0*	17.1*	1.0
Ten or more	-31.3*	-27.4*	-14.1*	-2.0

* statistically significant from the reference group (ref.) at 0.01 level or better
1. Probabilities are evaluated using the 2004 unemployment rate of 7.2%, the last available year. The marginal effect for the unemployment rate is an increase of one percentage point.
2. Recipient versus non-recipient.
Source: Statistics Canada, Longitudinal Administrative Data, 1992 to 2004.

Canadians, suggesting a general minority-language effect affecting both Anglophones in Quebec and Francophones outside Quebec, with the effect being stronger for the former.

No clear linear relationship was seen between the population of the area of origin and the probability of migration. In fact, people living in centres with a population exceeding 500,000 and those in rural areas had the lowest migration probabilities across all age-sex groups. Higher probabilities of migration were found for small towns and small to medium-sized urban centres, although the differences were rather small. For example, the probability of moving for men between the ages of 35 and 44 living in small towns (population less than 15,000) was only 11% higher than for their counterparts in an urban centre with a population of 500,000 or more.

Moving is typically more difficult and more costly for a family with children than for a family without children. Indeed, unattached individuals and couples without children had a higher probability of moving than couples with children, regardless of sex or age, although the difference has diminished over time.[11]

While older immigrants were generally more likely to migrate than their non-immigrant contemporaries, younger immigrants were less likely to migrate. However, for older immigrants in particular, as time in Canada increased, the likelihood of moving tended to converge with that of the Canadian-born. For example, in their first full year here, immigrant men or women age 45 to 54 were respectively 122% and 81% more likely

Table 5 Logistic regression for the probability of interprovincial migration for women

Age	20 to 24	25 to 34	35 to 44	45 to 54
	change in probability from baseline (%)			
Province				
Ref. - Ontario				
Newfoundland and Labrador	159.1*	58.1*	19.5*	42.1*
Prince Edward Island	120.0*	70.5*	30.5*	43.0*
Nova Scotia	174.4*	149.7*	130.6*	92.1*
New Brunswick	98.7*	53.5*	40.0*	20.5*
Quebec	-70.4*	-68.2*	-68.8*	-72.0*
Manitoba	206.2*	240.5*	276.7*	234.2*
Saskatchewan	405.3*	372.4*	367.0*	340.6*
Alberta	192.0*	230.4*	252.3*	251.9*
British Columbia	109.4*	114.1*	107.2*	92.6*
Minority language				
Ref. - all other				
English in Quebec	634.9*	721.2*	877.1*	930.9*
Francophone outside Quebec	108.4*	210.4*	207.0*	206.0*
Area residence				
Ref. - 500,000 and over				
100,000 to 499,999	1.4	2.1*	11.2*	13.5*
30,000 to 99,999	17.6*	6.3*	16.3*	23.1*
15,000 to 29,999	32.1*	16.3*	22.6*	22.4*
1,000 to 14,999	12.1*	4.2*	10.5*	6.6*
Rural area	-7.9*	-23.1*	-19.9*	-9.7*
Family type				
Ref. - married with children				
Married, no children	11.2*	35.7*	27.4*	20.9*
Lone parent	3.7*	17.2*	26.9*	29.8*
Single	67.0*	77.7*	57.9*	84.0*
Earnings				
Ref. - $25,000 to $50,000				
No earnings	4.1*	30.7*	66.2*	79.1*
$1 to $25,000	24.5*	19.0*	35.8*	47.7*
$50,000 to $100,000	-7.6*	14.3*	35.1*	19.9*
Over $100,000	6.5	17.9*	95.2*	112.6*
Unemployment rate[1]	10.4*	10.8*	11.5*	9.6*
Social assistance[2]	7.2*	16.9*	25.8*	10.7*
Employment insurance[2]	-2.3*	6.0*	28.9*	46.9*
Years since immigration				
Ref. - non-immigrant				
One	-17.6*	0.7	50.4*	81.4*
Two	-20.9*	33.9*	108.2*	103.7*
Three	-27.8*	12.2*	67.6*	94.1*
Four	-36.3*	-0.6	52.0*	53.9*
Five	-31.8*	-7.4*	40.6*	46.5*
Six	-41.2*	-13.7*	39.2*	26.8*
Seven	-35.1*	-18.8*	9.9*	31.1*
Eight	-37.3*	-27.4*	7.3	15.6*
Nine	-38.9*	-27.2*	15.6*	3.8
Ten or more	-30.4*	-27.3*	-15.0*	-2.7

* statistically significant from the reference group (ref.) at 0.01 level or better
1. Probabilities are evaluated using the 2004 unemployment rate of 7.2%, the last available year. The marginal effect for the unemployment rate is an increase of one percentage point.
2. Recipient versus non-recipient.
Source: Statistics Canada, Longitudinal Administrative Data, 1992 to 2004.

to migrate than their Canadian-born counterparts. However, after nine years, the effect became statistically insignificant.

The labour market and mobility decisions

Labour market characteristics were included in the regression to quantify the extent to which the probability of moving varies as labour market conditions vary and, in particular, to understand how these conditions affect mobility decisions. Labour market conditions have an important effect on the probability of migrating. An earlier study, covering 1982 to 1995, found similar relationships between labour market characteristics and the probability of moving, indicating that individuals responded to worsening labour market conditions by being more likely to migrate (Finnie 2004).

Three of the four variables used—earnings, receipt of social assistance and receipt of EI benefits—capture individual conditions, whereas the fourth, the provincial unemployment rate, captures labour market conditions.[12]

Results for all four variables suggest that people move away from relative hardship. For example, the lower a person's earnings or the higher the provincial unemployment rate, the more likely they are to migrate, arguably to find better-paying jobs or generally better economic conditions. In some cases, the effects are substantial.

People with no or little earnings were generally much more likely to migrate than those with earnings between $25,000 and $100,000. Individuals with no earnings had the highest probability of migrating among men and women

age 25 to 34 and had high probabilities in all other age-sex groups. For example, individuals without earnings and age 35 to 44 were more likely to migrate than those whose earnings were between $25,000 and $50,000—62% more likely among men and 66% among women. Individuals with earnings between $1 and $25,000 also had relatively high migration probabilities. Interestingly, while individuals with little or no earnings were more likely to migrate, so were those with very high earnings (over $100,000).

Receiving social assistance was also associated with higher probabilities of migrating to another province, which is consistent with the findings on earnings. Men and women between the ages of 35 and 44 saw the greatest effect—being 30% and 26%, respectively, more likely to migrate than those not receiving social assistance. The effect was generally lower for younger individuals (age 20 to 24), probably because episodes of receiving social assistance for them tend to be more transitory in nature and shorter in duration.

Receiving EI benefits may reduce market incentives for people to move from areas with poor labour market conditions. The results from the regressions suggest that this effect is not sufficient to overcome others, as individuals in receipt of EI were generally much more likely than non-recipients to migrate. This was especially true for individuals age 35 to 54. In particular, male and female EI recipients age 45 to 54 were 50% and 47%, respectively, more likely to move to another province.

Perhaps the single most informative indicator of a provincial labour market is its unemployment rate. Results from the regressions show that people react very strongly to the unemployment rate. Across provinces, as the unemployment rate rose by one percentage point, the probability of migration increased by about 10%. This was very consistent across all age-sex groups and the effect was never less than 9.4%. This is a potentially strong effect given that provincial unemployment rates tend to vary. For example, in 2003 rates ranged from 5.0% in Manitoba to 16.5% in

Table 6   Mean earnings in years 1 and 3

	Year 1		Year 3		Change	
	Non-migrant	Migrant	Non-migrant	Migrant	Non-migrant	Migrant
			2004 ($)			%
Men, age 20 to 54	39,300	40,400	42,300	46,500	7.6	15.1
Newfoundland and Labrador	27,000	20,700	28,500	36,400	5.6	75.8
Prince Edward Island	27,600	26,400	29,000	32,500	5.1	23.1
Nova Scotia	32,400	34,400	34,000	43,000	4.9	25.0
New Brunswick	30,700	33,300	32,300	41,400	5.2	24.3
Quebec	34,800	37,600	37,100	46,400	6.6	23.4
Ontario	43,500	47,700	47,300	51,600	8.7	8.2
Manitoba	33,700	36,400	35,900	43,100	6.5	18.4
Saskatchewan	34,500	34,600	36,700	43,500	6.4	25.7
Alberta	45,700	46,400	50,200	49,400	9.8	6.5
British Columbia	39,800	38,700	42,000	44,500	5.5	15.0
Women, age 20 to 54	21,200	19,700	22,900	22,000	8.0	11.7
Newfoundland and Labrador	14,400	11,300	15,500	17,500	7.6	54.9
Prince Edward Island	17,700	15,100	19,100	19,300	7.9	27.8
Nova Scotia	16,800	16,700	18,000	21,000	7.1	25.7
New Brunswick	16,100	15,500	17,300	19,700	7.5	27.1
Quebec	19,400	18,600	20,800	22,500	7.2	21.0
Ontario	23,500	23,700	25,500	25,000	8.5	5.5
Manitoba	19,600	18,000	21,100	20,400	7.7	13.3
Saskatchewan	19,000	16,700	20,600	20,100	8.4	20.4
Alberta	21,700	20,000	23,700	21,100	9.2	5.5
British Columbia	21,400	20,200	22,900	21,500	7.0	6.4

Note: Years 1 and 3 correspond to the year prior to the move and the year following the move.
Source: Longitudinal Administrative Data, 1992 to 2004.

Newfoundland and Labrador. This result suggests that significant reductions in a province's unemployment rate could help reduce its out-migration rate.

The effect of migration on earnings

Just as important as understanding the characteristics and the conditions that can lead to migration is determining what happens after the move. Since worsening labour market conditions seem to increase the odds of migrating, it is worth investigating whether the situation of migrants actually improves in their new province. One useful measure is comparing post-move earnings with their pre-move level.

Migrants generally enjoyed greater earnings increases than non-migrants, especially those leaving any Atlantic province, Quebec or Saskatchewan (Table 6). Patterns for men and women were similar, although the differences between migrants and non-migrants tended to be smaller for women. For men, migrants on average experienced an earnings growth of 15% from the year prior to migration to the year following migration, compared with 8% for non-migrants. However, the differences were much greater in the Atlantic provinces, Quebec and Saskatchewan. The biggest difference was found in Newfoundland and Labrador, where migrants recorded earnings growth of 76%, compared with 6% for non-migrants. No evidence of a positive effect on earnings was seen for migrants from Ontario or Alberta. The average earnings increase for women from the year prior to migration to the year after migration was 12%, versus 8% for non-migrants. As was the case for men, women leaving any Atlantic

province, Quebec or Saskatchewan experienced much greater earnings growth than women who stayed, whereas no positive difference was found for Ontario, Alberta or British Columbia.

Younger migrants from relatively poor provinces enjoy greater benefits

Regression analysis was also used to compare the earnings growth of migrants and non-migrants in order to account for differences in personal characteristics (see *Earnings effects models*). The earnings increase associated with migration was greater for younger individuals migrating from provinces where earnings were relatively lower than for other migrants (Tables 7 and 8). The earnings effect of migrating

was higher in all models for younger than for older individuals. In other words, young migrants leaving provinces with generally lower earnings, presumably to go to provinces where earnings are generally higher, typically see their earnings profile improve as they successfully integrate into the new labour market. Patterns for men and women were similar, although, again, the migration effects tended to be smaller for women. The results were also consistent with the earlier study covering 1982 to 1995, which found that the earnings effects of moving from the generally low-income Atlantic provinces were almost uniformly positive and in many cases quite large, with the greatest and most statistically significant effects found for the

Table 7 Fixed effects ordinary least squares regression for earnings, men

Age	20 to 24	25 to 34	35 to 44	45 to 54
	difference in log earnings			
Migrants versus non-migrants				
Newfoundland and Labrador	0.865*	0.583*	0.319*	0.280*
Prince Edward Island	0.429*	0.219*	0.068*	0.007
Nova Scotia	0.496*	0.224*	0.082*	0.062*
New Brunswick	0.449*	0.221*	0.098*	0.036*
Quebec	0.343*	0.212*	0.064*	0.035*
Ontario	0.097*	-0.029*	-0.025*	-0.039*
Manitoba	0.251*	0.107*	0.037*	-0.023
Saskatchewan	0.286*	0.180*	0.088*	0.040*
Alberta	-0.161*	-0.085*	-0.033*	-0.058*
British Columbia	0.092*	0.063*	0.090*	0.079*
Returnees versus non-migrants				
Newfoundland and Labrador	-0.329*	-0.113	-0.127	-0.220
Prince Edward Island	-0.188	-0.032	-0.157	-0.045
Nova Scotia	-0.005	-0.088	0.081	0.026
New Brunswick	-0.408*	-0.040	0.085	-0.053
Quebec	-0.349*	-0.170*	0.060	0.083
Ontario	-0.089	0.071	0.114*	-0.100
Manitoba	0.033	0.039	-0.253*	0.076
Saskatchewan	0.010	-0.085	-0.173*	-0.040
Alberta	0.195*	-0.018	-0.028	0.217*
British Columbia	-0.044	-0.085*	0.008	-0.019

* statistically significant from the reference group (ref.) at 0.01 level or better
Source: Statistics Canada, Longitudinal Administrative Data, 1992 to 2004.

Earnings effects models

Following a previous methodology (Finnie 2001), an ordinary least squares (OLS) regression model was used

$$Ln(y_{it+1}/y_{it-1}) = \alpha + \beta X'_{t+1} + \beta_1 Prov_{(t+1)} + \beta_2 Prov_{(t-1)} \cdot MIG' + \varepsilon_{it+1}$$

where the logarithm of the growth rate of earnings between the first full year after the move and the last full year prior to the move is a function of a set of control variables $[X'_{t+1}]$ (language, family type and marital status, age and calendar year), the destination province $[Prov_{(t+1)}]$ and an interaction term between the province of origin and the migratory status $[Prov_{(t-1)} \cdot MIG']$, the latter being the main variable of interest. The equation implicitly controls for unobserved fixed effects on earnings, which might be correlated with the probability of moving. Only cases with positive earnings were used.

Five different migratory statuses $[MIG']$ were defined for each three-year window available from 1992 to 2004 (that is, 1992/1994 through to 2002/2004): non-migrant, migrant, returnee, recent arrival and multiple migrant. If, for simplicity, only three provinces (A, B and C) were considered, the statuses would be the following:

Migratory status definition

	Year 1(t-1)	Year 2(t)	Year 3(t+1)
Non-migrant	A	A	A
Migrant	A	B	B
Returnee	A	B	A
Recent arrival	A	A	B
Multiple migrant	A	B	C

Recent arrival and multiple migrant are only shown to take the full set of migratory possibilities into account and are not discussed. Furthermore, using the preceding example for recent arrivals, if the province in year t+2 were again B, then the model would capture the migration in the next three-year window.

Migrant and returnee status effects are defined against the omitted non-migrant status. The regression outputs are differences in log points. When the coefficients are relatively small (between -0.1 and 0.1), the differences correspond approximately with percentage differences between migratory statuses.

younger age groups (Finnie 2001). However, the generally similar results for men and women are a departure from that study, which found much weaker effects for women than for men. The apparent convergence can arguably be attributed in part to the fuller integration of women in the labour market now than in the 1980s.

The earnings effects for migrants from Quebec were similar to those from Atlantic Canada, with the effect being strong for younger men and to a lesser extent for younger women, while being much weaker, albeit still positive and significant, for older individuals. No evidence of any earnings effect was seen for those migrating from Ontario, except for men age 20 to 24. For all other age groups, the coefficients were slightly negative, suggesting a very modest earnings disadvantage associated with migrating.

Table 8 Fixed effects ordinary least squares regression for earnings, women

Age	20 to 24	25 to 34	35 to 44	45 to 54
	difference in log earnings			
Migrants versus non-migrants				
Newfoundland and Labrador	0.770*	0.157*	0.019	0.135*
Prince Edward Island	0.250*	0.300*	0.049	0.154*
Nova Scotia	0.399*	0.135*	-0.015	0.039*
New Brunswick	0.353*	0.107*	0.049*	-0.034
Quebec	0.327*	0.112*	-0.011	-0.048*
Ontario	0.020	-0.067*	-0.083*	-0.073*
Manitoba	0.185*	-0.046*	-0.066*	-0.096*
Saskatchewan	0.270*	0.022	-0.007	-0.061*
Alberta	-0.101*	-0.146*	-0.059*	-0.060*
British Columbia	-0.040*	-0.067*	-0.046*	-0.003
Returnees versus non-migrants				
Newfoundland and Labrador	-0.942*	0.226	0.197	0.779*
Prince Edward Island	-0.409*	0.040	0.012	-0.279
Nova Scotia	-0.353*	-0.228*	-0.041	0.090
New Brunswick	-0.154	-0.046	0.126	-0.222
Quebec	-0.208	-0.044	-0.427*	0.513*
Ontario	-0.025	0.106	0.302*	0.177*
Manitoba	-0.109	-0.132	-0.063	0.354*
Saskatchewan	-0.296*	0.172	-0.168	0.064
Alberta	0.272*	0.184*	0.062	0.251*
British Columbia	0.057	-0.081	0.064	-0.016

* statistically significant from the reference group (ref.) at 0.01 level or better
Source: Statistics Canada, Longitudinal Administrative Data, 1992 to 2004.

In Manitoba and Saskatchewan, the earnings effect of migrating was important for men age 20 to 34 and women 20 to 24, but was, again, much lower for older men and women and not even significant in some cases. Migrants from the booming province of Alberta, perhaps not surprisingly, did not benefit in terms of earnings, and the effect of migrating was negative across all age groups for both men and women. For men in British Columbia, the effect of migrating was modest, but significant and consistent across all age groups. For women, however, no statistical evidence of any beneficial effect was seen.

Returnees no better off than those staying put

What happens to the earnings of migrants who return to their province of origin? To a certain extent, interprovincial migration could be seen as desirable for poorer provinces if migrants acquired skills and knowledge before returning and contributing to productivity growth. On the other hand, if returnees, after having gained from their interprovincial migration, recorded a subsequent earnings drop to the point where their earnings were no different than those of non-migrants, then the migration would have positive effects only for the province of migration. The latter seems more likely to be the case. The coefficients associated with the migratory status of returnees are generally statistically insignificant across all age-sex groups and provinces. What's more, they appear to be mostly negative, suggesting that the earnings growth of many returnees is lower than for those who never migrated.

Of course, individuals who migrate and return in only three years arguably share certain characteristics not taken into consideration, thus potentially biasing the results. For this reason, longer window periods of five years were constructed, with the migratory statuses of migrants, non-migrants and returnees defined following the same principles as with the three-year window. Results for these regressions found similar earnings effects and still did not suggest any earnings benefit for returnees.

Conclusion

Interprovincial migration is not only a key component of demographic change in Canada, but it also influences the supply of public services and tax revenues, the performance and efficiency of the labour market,

and productivity. For individuals, interprovincial migration can be an opportunity to explore new labour markets and potentially get a better job with better pay.

This paper looked at interprovincial migration longitudinally to identify factors prior to migration that affect the probability of moving and quantify the labour market gains associated with migration and how they compare with the results for non-migrants. A descriptive analysis of the extent and direction of migration was also provided.

The analysis provides empirical evidence on the influence of many personal and environmental characteristics on the probability of moving. In particular, it provides strong evidence that individuals in slack local labour markets are inclined to migrate to another province, most likely a province with better potential labour market outcomes. The analysis included measures of earnings, the unemployment rate of the province of origin, and the receipt of EI and social assistance. Improvements in labour market conditions and labour market outcomes of individuals would appear likely to reduce out-migration rates.

Other personal characteristics also had an impact. For example, Francophones outside Quebec and especially Anglophones in Quebec were both more likely to migrate to another province than other Canadians. Younger people were also much more likely to migrate. Interestingly, with all observable characteristics held constant, residents of Newfoundland and Labrador were not much more likely to migrate than other Canadians, which suggests that the high out-migration rates for this province are due to a very large extent to differences in personal and labour market characteristics.

Important earnings effects associated with migration were found: most often migrants had better earnings growth than non-migrants. The effect was larger for younger individuals migrating from provinces where earnings were relatively lower; it was much smaller, even sometimes non-existent, for other migrants. This result suggests that young migrants leaving relatively poorer provinces successfully integrate into their new labour market. However, no similar effect was found for migrants who returned to their home province.

Perspectives

Notes

1. Census of Canada 2001 and 2006.

2. See Finnie 2004 for a survey and a discussion of previous studies.

3. Interregional migration has also been a topic of research in other countries, and especially in Europe. See, for example, Huber 2004.

4. The immigrant indicator and the years since arrival used in the logistic regressions are based on the linked LAD-IMDB (immigration database) file. The IMDB file contains information collected by Citizenship and Immigration Canada from immigrants on their arrival.

5. The province of residence can differ from the province of work, in particular for individuals living in urban areas that straddle more than one province (for example, Ottawa-Gatineau and Lloydminster).

6. Gomez and Gunderson 2007 discusses policy options related to various potential barriers to interprovincial mobility of labour.

7. See Milan and Martel 2008 for a discussion of recent (up to 2007) trends in interprovincial migration.

8. To some extent, migration rates are expected to be inversely proportional to a province's size since intraprovincial mobility is more likely in large provinces.

9. The proportions are calculated by restricting the sample to people living in Newfoundland and Labrador in 1992 and elsewhere in Canada in 2004.

10. Given the limited number of personal characteristics available in the LAD, it was not possible to add potentially relevant variables like education, although it could be argued that part of the education effect would be captured, albeit imperfectly, by earnings.

11. This result contrasts somewhat with that of Dion and Coulombe (2008), who found single individuals to be less likely to migrate than other individuals. However, the authors considered all moves, including intraprovincial moves, and used different sample selection rules.

12. Earnings were represented in the model by the dollar value of employment earnings. The social assistance and unemployment benefits variables are binary indicators of receipt.

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Bridge employment

Benoît-Paul Hébert and May Luong

several studies show that many Canadians who 'retire' from employment (often with a pension) subsequently return to the labour market (Singh and Verma 2001, Pyper and Giles 2002, Schellenberg et al. 2005, and Wannell 2007a and 2007b). If 'retirement' is the complete cessation of paid work, it is no longer clear when the process of retiring actually begins. The length of this process can also vary substantially, and may involve either a gradual reduction in time spent working or exiting from, and returning to, the labour force one or more times prior to the complete cessation of paid work.

What is bridge employment?

'Bridge employment' refers to any paid work after an individual retires or starts receiving a pension (Ruhm 1990). Bridge employment can provide extra income for those who do not have enough pension income or savings in their later years. It can also help older workers balance work and leisure time while remaining engaged in economically and socially productive activities. Bridge employment can therefore contribute to the well-being of individuals and their families. Many U.S. studies (for example, Quinn and Kozy 1995, Kim and Feldman 2000, and Cahill et al. 2005) have examined bridge employment and the transition to retirement, but the subject has not been extensively researched in Canada. Given population aging and reduced labour force growth, understanding the transition to retirement becomes even more important.

This study first presents cross-sectional analyses using the Survey of Labour and Income Dynamics to show the prevalence of bridge employment among Canadians age 50 to 69 between 1999 and 2004. Then, longitudinal examination of a group of older workers

over the same period shows transitions into and out of bridge employment and retirement. The study examines when individuals are more likely to enter bridge employment, who is more likely to choose bridge employment over retirement and how long those individuals typically remain in bridge employment, and the likelihood of entering bridge employment for those who retired (see *Data source and definitions*).

Chart A   Bridge employment increased more or less steadily from 1999 to 2004

Persons age 50 to 69
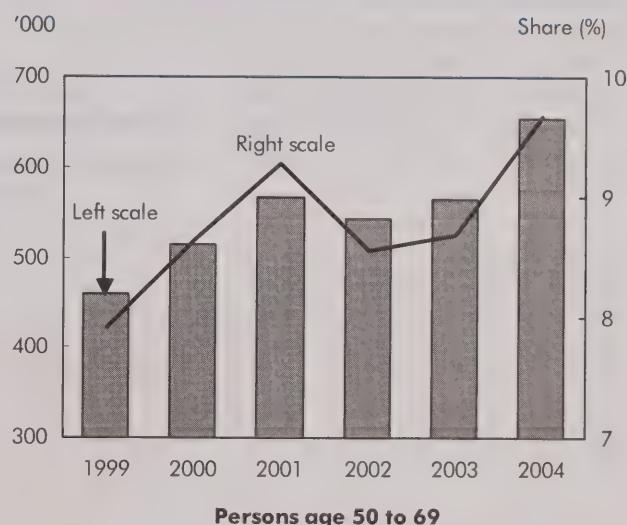
Source: Statistics Canada, Survey of Labour and Income Dynamics, 1999 to 2004.

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Chart B The prevalence of bridge employment doubles after age 60

%

Source: Statistics Canada, Survey of Labour and Income Dynamics, 2004.

a sharper drop at age 60—the minimum age for early benefits under the Canada Pension Plan (CPP) and Quebec Pension Plan (QPP). The probability of remaining in career employment was about 70% at age 59 and dropped to 57% at age 60.[1] It then declined more steeply, with only 25% remaining in career employment at age 64. When workers reached 65—the age for full entitlement to CPP, QPP, Old Age Security (OAS) and the Guaranteed Income Supplement (GIS), as well as mandatory retirement in some jurisdictions—the probability of remaining in career employment was less than 3%.[2]

...to bridge employment or retirement

While the prevalence of bridge employment among persons age 50 to 69 was about 9%, the conditional probability (that is, the probability of a transition at a given age, conditional on not having had this transition previously) of experiencing an episode of bridge employment varied widely with age (Chart D).

The conditional probability was higher for entering bridge employment than for entering retirement at each age (the reverse is likely true past age 66, but the SLID data do not allow verification). As could be expected in light of the survival rates, the conditional

How common is bridge employment?

The proportion of individuals age 50 to 69 in bridge employment averaged about 9% over the 1999 to 2004 period, going from 7.9% in 1999 to 9.7% in 2004 (Chart A). However, the numbers of those in bridge employment increased by more than 40% (from 461,000 to 654,000) over the period as the size of this age group increased due to aging of the baby-boom cohorts (the first boomers turned 50 in 1997). Not surprisingly, the prevalence of bridge employment varied greatly by age, ranging from a low of 2% among those 50 to 54 to a peak of 18% for those 65 to 69 in 2004 (Chart B).

From career employment...

Longitudinal analysis shows that the probability of remaining in a career job declines steadily as age increases (Chart C). The estimated 'survival rate' (Kaplan-Meier estimate) between ages 52 and 66 for those in career employment at age 51 declined steadily up to age 59 with

Chart C The probability of remaining in career employment drops markedly at age 60, even more so at age 65

%

Age
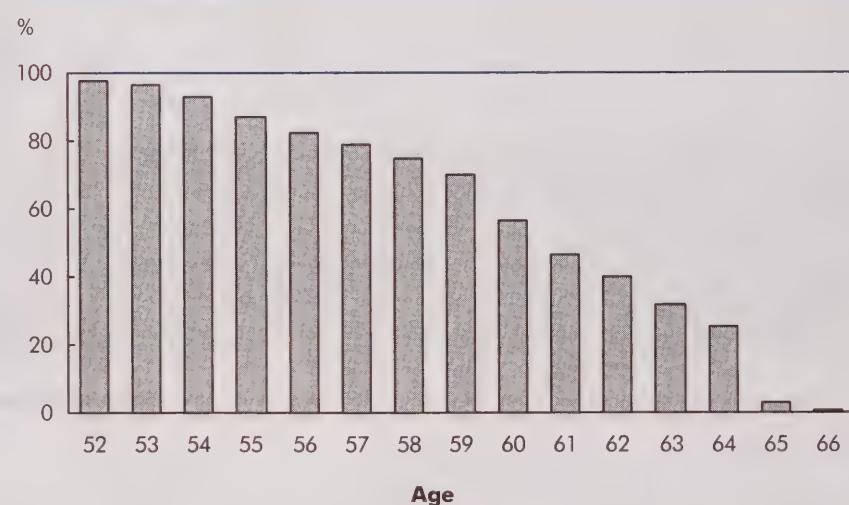
Source: Statistics Canada, Survey of Labour and Income Dynamics, panel 3, 1999.

Chart D The conditional probability of bridge employment consistently exceeds that of retirement

Source: Statistics Canada, Survey of Labour and Income Dynamics, panel 3, 1999.

probability of entering bridge employment ranged between 11% and 14%, while for retirement it varied between 4% and 8%. At age 65, the probability of moving to bridge employment rose dramatically to 76%, while the conditional probability of retirement increased to 18%. In other words, the relatively few individuals still in career employment when they reached age 65 were very likely to transition in that year. The probability of entering bridge employment decreased at age 66 but remained high, while the probability of retirement increased further to 26%. These results are roughly in line with the CPP/QPP take-up rates by age based on tax records (Wannell 2007b).[3]

Conditional probabilities indicate when transitions are more or less likely to occur overall, but they are not adjusted for individual characteristics that may affect the timing of such transitions. In order to assess how such characteristics influence the likelihood of transitioning to bridge employment or

probability of entering bridge employment or retirement was very low before age 55 and increased slightly between the ages of 55 and 59 (approximately 4% for bridge employment and 2% for retirement). Both probabilities increased at age 60. Between ages 60 and 64, the conditional

Data source and definitions

The **Survey of Labour and Income Dynamics** (SLID) covers roughly 97% of the Canadian population, excluding those in the territories, in institutions, on First Nations reserves or in military barracks. Each panel of respondents, approximately 15,000 households or 30,000 adults, is surveyed for six consecutive years. A new panel is introduced every three years, so two panels always overlap. This study uses the third panel of the SLID, which followed respondents from 1999 to 2004. Cross-sectional respondents age 50 to 69 were categorized in career employment, bridge employment, or retirement for each year.

Career employment means having employment income or Employment Insurance (EI) benefits, no pension income and not reporting retirement as the major activity.

Bridge employment means having employment income or EI benefits, pension income or reporting retirement as the major activity, and not out of the labour force for more than six consecutive months at the end of the year.

Retirement means having pension income or self-identifying as retired with no employment income or EI benefits, or having pension income or self-identifying as retired with employment income or EI benefits, but out of the labour force for more than six consecutive months at the end of the year.

Individuals with no earnings or pension benefits and whose self-reported major activity was not working, looking for work or retired were categorized as **other**.

The examination of transitions into and out of bridge employment used a longitudinal sample of 3,000 respondents age 51 to 65 in a career job in 1999, assuming they had never retired or entered bridge employment previously. This age range was chosen because transitions occurring at earlier ages are rare (and most likely related to special situations), and because the assumption of continued career employment before 1999 appeared questionable for those over 65.

to retirement, a discrete-time event-history model was used. Bridge employment and retirement were treated as competing outcomes (see *Discrete-time event-history analysis*). The main findings from the final model may be summarized as follows (Table 1):

■ Several studies suggest that the timing of retirement (as measured by the average age of retirement, for example) is different for women than men. However, among the group of older workers followed in this study, women and men had roughly equal probabilities of entering bridge employment or retirement after controlling for other factors.[4]

■ Compared with singles and individuals with an employed spouse, older workers whose spouse was not working were more likely to leave career employment. For this group, the conditional probabilities of leaving career employment for bridge employment or retirement were 1.8 and 2.3 times higher respectively.

■ Individuals with a university education were almost twice as likely as those with less than a high school education to enter bridge employment. However, the probability of entering retirement did not seem to vary by education.

■ Health and functional limitations have previously been identified as important determinants of the transition to retirement.[5] In this study, however, after controlling for employment-related characteristics, the conditional probability of entering bridge employment or retirement did not vary significantly with self-reported health status or disability status.

■ The number of hours worked in the previous year was related to the probability of transition at a given age, which suggests that individuals may prepare for their transition. Compared with those working 1,501 to 2,500 hours (corresponding to full-time, full-year employment), individuals who worked between 501 and 1,500 hours were twice as likely to enter bridge employment and those who worked 500 hours or less were seven times more likely to enter retirement.

■ The likelihood of bridge employment increased with the previous year's hourly earnings. Results suggest a 3% increase in the conditional probability for each additional dollar in hourly earnings. Thus, workers with higher earnings appear more likely to leave their career job, activate pension benefits, and continue to work in bridge employment.

■ Individuals with an employer-sponsored pension plan (in the job they held in the previous year) were more likely to leave career employment than those without such a plan, consistent with results from previous studies. The effect was more important for retirement (where the conditional probability more than tripled) than for bridge employment (where the probability did not quite double). This is likely because employer-sponsored pension plans usually require individuals to leave their position in order to start receiving pension benefits.

■ Older workers in the bottom fifth of the income distribution (adjusted household income[6]) were over three times more likely than those in the middle 20% to leave career employment for retirement.

■ Workers living in rural areas or small communities were almost twice as likely as those living in large urban centres to enter bridge employment.

From bridge employment to retirement, and vice versa

How long do individuals remain in bridge employment before entering retirement? And how likely are those who went from career employment to retirement to subsequently enter bridge employment? Analysis of these questions was limited for two reasons. First, the smaller samples (i.e. the subgroup of individuals who entered bridge employment or retirement during the survey period) allowed measuring transitions between bridge employment and retirement, but prevented a multivariate analysis of the characteristics affecting the likelihood of these transitions. Secondly, while it is possible that some individuals alternate more than once between bridge employment and retirement, sufficient information was available only for the first transition (follow-up data are available for a maximum of four years after a first transition and sample sizes decrease with the number of transitions). Hence, the following estimates pertain to a first episode of bridge employment or retirement, and they are not adjusted for individual characteristics.

On the whole, older workers were more likely to transition to bridge employment than to retirement, but bridge employment is a transitory state, not a permanent one. Regardless of their age, 66% of older workers entering bridge employment during the survey period were still there one year later, while the rest had retired. The proportion remaining in bridge employ-

Table 1 Factors affecting transition from career employment to bridge employment or retirement: Estimates from discrete-time competing-risks model

	Bridge employment		Retirement	
	Coefficient	Standard error	Coefficient	Standard error
Age	**0.364***	**0.108**	**0.535***	**0.165**
Age^2	-0.111*	0.030	-0.076	0.052
Age^3	-0.018	0.012	-0.045*	0.022
Age^4	0.006*	0.001	0.004*	0.002
Age^5	0.001*	0.000	0.002*	0.001
Women (ref. men)	0.322	0.177	0.059	0.307
Spouse/partner (ref. spouse/partner working)				
No spouse/partner	0.010	0.229	0.308	0.398
Spouse/partner not working	0.605*	0.166	0.822*	0.399
Health status (ref. very good)				
Excellent	-0.276	0.199	-0.756	0.404
Good	-0.178	0.188	-0.224	0.318
Fair or poor	0.099	0.265	0.235	0.380
Stress level (ref. somewhat stressful)				
Very stressful	0.185	0.208	0.696	0.438
Not very stressful	0.528*	0.165	0.593	0.378
Not at all/no opinion	0.160	0.272	0.581	0.454
Education (ref. less than high school)				
High school	0.341	0.220	0.028	0.424
Postsecondary certificate	0.270	0.196	-0.281	0.373
University degree	0.629*	0.225	0.135	0.554
Unknown	-0.156	1.243	0.187	8.126
Years (≥ 6 months) worked full-time (ref. 21 to 35)				
0 to 20	-0.318	0.235	-0.668	0.403
Over 35	-0.038	0.195	-0.399	0.419
Unknown	0.048	0.219	-0.929*	0.432
Annual work hours t-1 (ref. 1,501 to 2,500)				
1 to 500	0.516	0.454	1.942*	0.540
501 to 1,500	0.733*	0.186	0.592	0.418
Over 2,500	0.174	0.275	-0.368	3.107
Hourly wage rate	0.027*	0.007	0.003	0.015
Income quintile (ref. third)				
Lowest	0.009	0.379	1.206*	0.595
Second	0.380	0.232	0.204	0.566
Fourth	0.159	0.217	0.896	0.531
Highest	0.341	0.219	0.708	0.586
Employer pension plan (ref. no)	0.531*	0.159	1.200*	0.316
Urban area (ref. 500,000 and over)				
0 to 29,999	0.613*	0.233	-0.164	0.458
30,000 to 99,999	0.305	0.272	0.421	0.664
100,000 to 499,999	0.291	0.203	0.344	0.433
Rural area	0.661*	0.202	0.592	0.387
Constant	-4.300*	0.365	-5.238*	0.817

* significantly different from a reference group (ref.) or zero at the 0.05 level
Note: Age (centered on the mean) and its powers (Age^2 to Age^5) are used to model a linear and various non-linear relationships between age and the conditional probability of entering bridge employment or retirement (see *Data source and definitions*). Initial sample size was 2,985. Standard errors were estimated by the bootstrap method.
Source: Statistics Canada, Survey of Labour and Income Dynamics, panel 3, 1999 to 2004.

Discrete-time event-history analysis

Longitudinal respondents in the third panel of the SLID were surveyed annually over the period 1999 to 2004. For those age 51 to 65 and in career employment in 1999, the following variable was defined:

$$y_t = \begin{cases} 0 & \text{in career employment (or censored) at age } t \\ 1 & \text{entered bridge employemnt at age } t \\ 2 & \text{entered retirement at age } t \end{cases}$$

Respondents who were in career employment in 1999 were assumed to have neither retired nor entered bridge employment previously, and were included in the group at risk of leaving career employment starting at the age they were in 2000. Because the categories career employment, bridge employment and retirement were defined on an annual basis, transitions could only be measured in one-year intervals.

The conditional probability (or risk/hazard) of leaving career employment for bridge employment at age t is the probability of entering bridge employment at t conditional on having been in career employment up to t-1:

$$h_B(t) = P(y_t = 1 \mid y_{t-1} = y_{t-2} = \ldots = y_{52} = 0)$$

Similarly, the risk of leaving career employment for retirement is:

$$h_R(t) = P(y_t = 2 \mid y_{t-1} = y_{t-2} = \ldots = y_{52} = 0)$$

This leaves $1 - h_B(t) - h_R(t)$ as the risk of remaining in career employment at age t. With the assumption of independent outcomes, $h_B(t)$ and $h_R(t)$ can be estimated via maximum likelihood in a standard multinomial logit model (Fahrmeir and Tutz 2001):

$$h_B(t) = \frac{\exp(f_B(t) + x\boldsymbol{\beta}_B)}{1 + \exp(f_B(t) + x\boldsymbol{\beta}_B) + \exp(f_R(t) + x\boldsymbol{\beta}_R)}$$

$$h_R(t) = \frac{\exp(f_R(t) + x\boldsymbol{\beta}_R)}{1 + \exp(f_B(t) + x\boldsymbol{\beta}_B) + \exp(f_R(t) + x\boldsymbol{\beta}_R)}$$

Two functions of age, $f_B(t)$ and $f_R(t)$, account for time-dependence, x is a set of personal, household and employment-related characteristics (either time-constant or time-varying), and β_B and β_R are sets of coefficients representing the effects of variables in x on $h_B(t)$ and $h_R(t)$ respectively.

It is usual in discrete-time event history analysis to model time-dependence with a set of binary indicators (one for each t, minus one). Estimated baseline risks obtained with such indicators are shown in Chart D. Some of the binary indicators were subject to multi-collinearity problems in specifications of the model that included other independent variables. For this reason, the whole set of indicators was replaced with a polynomial function of age of degree 5:

$$f_B(t) = \gamma_{B1}t + \sum_{i=2}^{5} \gamma_{Bi}(t - \bar{t})^i$$

A similarly defined $f_R(t)$ was also used. In the equation, the γ's are coefficients to be estimated. In contrast to other functions tested (e.g. polynomials of lower or higher degree, and linear spline functions), the aforementioned polynomial functions rendered a good approximation of the baseline risks obtained with the binary indicators. The estimates of β_B and β_R do not change much under these different parameterizations of $f_B(t)$ and $f_R(t)$.

The initial model specification included many personal, household and employment-related characteristics, a number of which were removed from subsequent specifications because they were not statistically significant. Personal and household characteristics were sex, presence of a spouse (and labour force status of that person), an interaction between sex and presence of a spouse, immigrant status, visible minority status, health status[†], stress level[†], disability status[†], homeownership, household composition (living with children, living with parents/other relatives), adjusted household income quintile, education, size of area of residence, and region. Employment-related characteristics were occupation, industry, annual hours of work[†], composite hourly earnings[†], number of years worked full time for at least six months in a given year, type of job[†] (permanent, non-permanent or self-employed), an indicator for supervisory responsibilities[†], indicators for employer-provided benefits[†] (dental, medical, or life/disability insurance), an indicator for employer-sponsored pension plan[†], and a private/public sector indicator[†]. Binary indicators for survey year (to account for possible period effects) were also part of this initial specification. Variables marked with an obelisk ([†]) were lagged by one year to ensure that transitions and possible antecedents were ordered in time. All variables (except sex) could vary over time.

ment declined (at a decreasing rate) in the following years and, after four years, about 42% were still in bridge employment. A rough estimate of the median time in bridge employment is two to three years.[7]

The conditional probability of leaving bridge employment for retirement decreased as the time spent in bridge employment increased, going from about 35% in the first year to 8% in the fourth year. Longer-term trends could not be examined, but it is plausible that the probability increases after a few more years. Fur-

thermore, these estimates were not adjusted for individual characteristics. In particular, the conditional probability likely evolves differently depending on the age of workers when they entered bridge employment—being higher for older individuals in the short term.

For those who entered retirement directly after career employment, the 'survival rate' in retirement was estimated at 61% after one year, which was lower than the probability of remaining in bridge employment for

a similar amount of time, but it declined less rapidly afterwards. After four years, 47% of those who left career employment for retirement remained in retirement.

The conditional probability of leaving retirement was highest in the first year, reaching almost 40%, and was 10% or less from the second year to the fourth year. Thus, consistent with other studies, retirees returning to the labour market appeared more likely to do so in the first year following their retirement. Past the first year, the likelihood of a return to work seemed much lower, at least up to the fourth year. Again, these estimates were not adjusted for individual characteristics—in the short term, younger retirees may have a higher return probability.

Conclusion

Overall, the results in this study support the notion of retirement as a process rather than a discrete event. Many older workers who start receiving a pension stay in the labour market in some capacity for roughly two to three years before they completely cease employment. As well, many of those who cease paid work at one point subsequently return to the labour market, especially in the first year following retirement. Therefore, it could be argued that conceiving of work and retirement as separate stages in the course of life does not accurately mirror reality for a substantial proportion of older adults.

Given some of the characteristics (higher earnings, university education and an employer-sponsored pension plan) associated with a greater probability of leaving career employment for bridge employment, it would appear that for individuals making this transition it may well be a choice rather than a necessity. Given the data limitations, it was not possible to assess whether this also held true for those who returned to the labour market after a period of retirement. However, a previous study found that financial issues were an important reason for retirees to return to the labour market, particularly for those who had retired because of downsizing, unemployment or health problems (Schellenberg et al. 2005).

Perspectives

■ Notes

1. In principle, the sample allowed an examination of transitions out of career employment occurring between ages 52 and 70, but no transitions were seen after age 66.

2. Because of small sample sizes, estimates pertaining to ages 65 and 66 should be used with caution.

3. Other studies that examine the timing of the transition to retirement or the timing of pension benefit take-up in Canada include Baker et al. (2001), Compton (2001), Waslander (2003) and Schirle (2007). Because of different definitions and samples, their results are not directly comparable to estimates presented here.

4. For this study, women and men were assumed at first to have different baseline conditional probabilities of entering bridge employment or retirement, but the preliminary results did not support that hypothesis.

5. See Campolieti (2002), Magee (2002), Au et al. (2005) and Schirle (2007).

6. The adjusted household income is the total household income adjusted for family size and composition based on the family equivalence scale, which is the sum of the equivalences for each family member. The oldest person in the household receives an equivalence of 1.0 and the second oldest person 0.4. Other family members age 16 and older receive an equivalence of 0.4 and those under 16 receive 0.3. This adjustment enables comparison of incomes for all families.

7. More specifically, this estimate is for the first episode of bridge employment.

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Rural commuting

Spencer Harris, Alessandro Alasia and Ray D. Bollman

For most people, a commuter is someone who lives in the periphery, travels to work in the urban core, and travels back home at the end of the working day. Research on commuting in Canada's major cities indicates that although commuting remains common, the picture is becoming more complex with increasing periphery-to-periphery flows (Heisz and LaRochelle-Côté 2005).

Various studies have focused on rural commuting, (Schindegger and Krajasits 1997, Green and Meyer 1997, and Mitchell 2005), but, outside major agglomerations, the understanding of the multidirectional nature of commuting patterns is more limited. This article explores the multidirectional nature of commuting patterns in rural areas. It shows that these patterns are more complex than a simple core-periphery approach, typically depicted as a set of circles centred on an urban core, would suggest. A main finding is that, for rural and small town residents, rural-to-rural commuting is as important as rural-to-urban commuting. In other words, rural commuters are as dependent on rural labour markets as on urban labour markets—commuting flows out of communities tend to be multidirectional, not merely periphery-to-core.

This study presents baseline data on the pattern and size of rural commuting flows in 2001 and provides a better understanding of how rural communities are affected by both urban-bound commuters and rural-bound commuters. It also shows that Canada's Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs), which are delineated on the basis of commuting flows, essentially constitute self-contained labour markets. Overall, only 4% of the jobs in these urban areas are occupied by people commuting from rural areas.

The analysis used the 2001 Census of Population and its census subdivisions (CSDs) classified as part of either a larger urban centre (LUC) or a rural and small town (RST) area (see *Data source and definitions*). The methodological challenges caused by the multidirectional nature of commuting flows should be kept in mind. Although the use of different census geographies and different definitions of commuting would, to some extent, modify these results, the existing research on commuting flows within CMAs has also shown the increasing complexity of commuting flows within these urban delineations, as well as the rapid growth of periphery-to-periphery flows. Hence, the overall findings presented in this paper highlight trends that should be considered in future research on rural commuting and rural labour markets.

Where are the workers and where are the jobs?

In 2001, 2.8 million workers out of 14.7 million resided in rural and small town (RST) areas (Table 1). Of the 2.8 million, about 2.3 million also worked in an RST area, but not necessarily in the municipality where they were living and approximately 0.4 million commuted to a municipality in a larger urban centre (LUC).

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Data source and definitions

The analysis uses the 2001 **Census of Population** census subdivisions (CSD). Geographic location (coordinates of the geographic centre) and classification of CSDs according to type of area (MIZ code) are from Statistics Canada (2002b). For more details on place of work and place of residence, see Statistics Canada (2002a).

A **commuter** is an individual who reports a place of residence in one CSD and a place of work in a different CSD that is less than 250 km away. Since only one-fifth of households received the longer census form, confidentiality and reliability issues preclude the estimation of commuter flows of less than 20 commuters between any two CSDs (i.e. a sample of less than 4 commuters). The focus is on the nature of labour markets connected by daily commuting. For this reason, the definition of commuter was limited to anyone who worked within 250 km of their place of residence—specifically, only commuting flows between pairs of CSDs whose geographic centres were less than 250 km apart.

This distance threshold excluded only 0.7% of the total flows of commuters available. Individuals living and working in municipalities more than 250 km apart are a marginal group that might include those working at a temporary or seasonal worksite but still reporting their original place of residence or 'fly-in/fly-out' workers (for example, miners or construction workers on a worksite for 7 or 10 days and then home for several days).

The definition of commuting implies the crossing of CSD boundaries when travelling to work. Hence, it does not include those travelling relatively long distances to work within the boundaries of the same CSD. On the other hand, it includes individuals travelling a short distance but crossing a CSD boundary. The goal of this analysis is to account for multidirectional flows (*from-to*), which requires that a continuous space be broken into discrete geographic units, leading to some degree of approximation of real commuting flows.

A **census subdivision** (CSD) is a municipality (i.e. incorporated town, rural municipality, city, etc. determined by provincial legislation) or its equivalent (Indian reserves, Indian settlements, and unorganized territories). The 2001 Census of Population identified 5,600 CSDs (Statistics Canada 2002a). These can vary tremendously in population size—from just a few residents to over 2 million in Toronto. Also, geographic spread can vary widely—from less than 1 square kilometre for a small rural town to large geographic expanses of 'unorganized' territories in northern parts of many provinces. CSD-level data are aggregated into types of areas according to Statistics Canada's Statistical Area Classification.

Larger urban centres (LUCs) consist of CSDs classified as part of **census metropolitan areas** (CMAs) and **census agglomerations** (CAs). In 2001, CMAs had an urban core of 100,000 or more and included all neighbouring CSDs where 50% or more of the resident workforce commuted to the urban core. CAs had an urban core of 10,000 to 99,999 and also included neighbouring CSDs where 50% or more of the resident workforce commuted to the core.

- **Larger CMAs** have a total population of 500,000 or more. In 2001, this included Québec, Montréal, Ottawa-Gatineau, Toronto, Hamilton, Winnipeg, Calgary, Edmonton and Vancouver.

- **Smaller CMAs** have a population of 100,000 to 499,999.

- CAs have a population of 10,000 to 99,999.

Rural and small town (RST) areas comprise CSDs that are not part of a CMA or CA. RSTs are further classified into a **metropolitan-influence zone** (MIZ):

- **Strong MIZ**: 30% or more of the resident workforce commutes to a CMA or CA;

- **Moderate MIZ**: 5% to 29% of the resident workforce commutes to a CMA or CA;

- **Weak MIZ**: less than 5% of the resident workforce commutes to a CMA or CA; and

- **No MIZ**: none of the workforce commutes to a CMA or CA (or the workforce is less than 40 workers).

The definitions of LUC and RST are based on commuter activity into a CMA or CA. Thus, the amount of commuter activity into a CMA or CA and the type of MIZ to which a CSD is assigned are directly correlated. Similarly, some of the results simply confirm the commuting flows used to generate the classification. On the other hand, the MIZ classification does not assess the flows that occur between different MIZ categories or within the same MIZ category. This is where the analysis is most revealing. In this study, the CMA and CA classifications are based on total population of the agglomeration rather than the population in the urban core. Any agglomeration with total population greater than 100,000 is classified as a CMA; hence, smaller CMAs include 7 CAs with an urban core of less than 100,000 but a total population greater than 100,000. Also, for practical purposes, 16 non-CA CSDs in the territories, with small commuting flows to a CA in the territories, were assigned to the strong MIZ class. However, many of these were excluded because the commuting flow involved less than 20 people or the distance they travelled was 250 km or more.

The geography used has certain implications for the results. Alternative definitions of rural could generate different insights. For instance, an alternative definition is census rural, which refers to the population outside centres of 1,000 or more inhabitants and outside areas with a population density of 400 or more inhabitants per square kilometre (du Plessis et al. 2001). Each CSD may have some census rural areas and some census urban areas. Essentially, this is the countryside within each CSD. In the 1991 to 2006 period, more than one-third of census rural residents lived in a CSD delineated as part of a CMA or CA (Bollman and Clemenson 2008). Thus, census rural and census urban areas would capture multi-directional commuting flows within a CSD (rural-urban, rural-rural, etc.). Specifically, given the definition of rural used, the rural-to-rural commuting in this analysis includes flows between very small municipalities and towns with up to 10,000 inhabitants.

For details on the definitions outlined above see McNiven et al. (2000) and Statistics Canada (2002a).

Table 1   Workers by place of residence and place of work

| | Place of work | | |
	All areas	Larger urban centres	Rural and small town areas
		'000	
Place of residence			
All areas	14,695	12,197	2,498
Larger urban centres	11,917	11,753	164
Rural and small town areas	2,778	444	2,334
		%	
All areas	100.0	83.0	17.0
Larger urban centres	100.0	98.6	1.4
Rural and small town areas	100.0	16.0	84.0
All areas	100.0	100.0	100.0
Larger urban centres	81.1	96.4	6.6
Rural and small town areas	18.9	3.6	93.4

Note: Includes all workers commuting between census subdivisions of the same type as well as those living and working in the same census subdivision.
Source: Statistics Canada, Census of Population, 2001.

Table 2   Commuters by place of residence and place of work

| | Place of work | | |
	All areas	Larger urban centres	Rural and small town areas
		'000	
Place of residence			
All areas	4,820	4,210	611
Larger urban centres	3,930	3,766	164
Rural and small town areas	891	444	447
		%	
All areas	100.0	87.3	12.7
Larger urban centres	100.0	95.8	4.2
Rural and small town areas	100.0	49.8	50.2
All areas	100.0	100.0	100.0
Larger urban centres	81.5	89.5	26.8
Rural and small town areas	18.5	10.5	73.2

Note: Includes those commuting between census subdivisions of the same type.
Source: Statistics Canada, Census of Population, 2001.

Rural and small town workers were not major contributors to jobs in larger urban centres. About 96% of urban jobs were filled by LUC residents, either living in the same municipality or commuting from another LUC. Less than 4% of urban jobs were filled by commuting RST residents. However, because of the difference in the size of the population in LUC and RST areas, the 0.4 million rural commuters represented 16% of all workers residing in RST areas. At the same time, nearly 164,000 commuters were going from an LUC municipality to a municipality in an RST area. These workers represented only a little over 1% of the workers residing in LUCs, but they filled approximately 7% of the jobs in RST areas.

The big picture: Rural and urban commuters

In 2001, approximately 4.8 million individuals, or one-third of the Canadian workforce, crossed a municipal boundary in their travel to work (Table 2). Most commuted a relatively short distance—only 13% travelled more than 25 km to work, not including those who remained within the same municipality (Statistics Canada 2003).

With over 80% of the Canadian population living in LUCs in 2001 (Bollman and Clemenson 2008), it is not surprising that most of the commuting was concentrated in and around urban centres. About 3.8 million commuters travelled between urban jurisdictions. They represented 78% of all commuters in Canada. The remaining commuters represented all other regional flows (urban-to-rural, rural-to-urban or rural-to-rural).

Only about 164,000 people, or 4% of commuters who resided in an LUC, travelled to a municipality in an RST area for work. This vividly illustrates the extent to which LUCs represent self-contained labour markets.

Among commuters residing in RST areas, slightly over half (447,000) were going to another RST municipality. They, therefore, contributed to the economy of other rural areas. In comparison, approximately 444,000 workers commuted from a rural and small town area to a larger urban area. This suggests that rural-to-rural commuting accounted for a significant proportion of the labour supply in RST areas. These results indicate that when it comes to workers commuting from an RST area, rural jobs are just as important as urban jobs.

The commuting pattern that emerges from these results also seems to hold for alternative definitions of rural. In particular, research on commuting patterns within CMAs points to the increasing complexity of commuting patterns within metropolitan agglomerations. Between 1996 and 2001, the relative economic importance of inner cities declined as the number of jobs in the suburbs increased at more than four times the pace of those in the core urban areas (Heisz and LaRochelle-Côté 2005). As a result, more and more people commuted across town to these suburban areas. From 1981 to 2001, the number of workers travelling to the suburbs increased 74% to 1.8 million, while those commuting to the city core rose by only 28% to 1.3 million (Statistics Canada 2003). Of those who commuted to surrounding municipalities in 2001, about two-thirds came from another surrounding municipality and one-third from the core urban municipality. The 1.2 million workers commuting from one suburban municipality to another in 2001 represent a 91% increase from 1981 to 2001.

Because most childrearing and housekeeping responsibilities still seem to fall to women, it might be expected that fewer women would commute and that those who did would go smaller distances. In terms of commuting share, for almost all source/destination combinations, women and men differed by only a few percentage points from the overall commuter shares, although women's rates tended to be higher between CSDs in the same type of area. Approximately 400,000 more men than women commuted (2.6 million compared with 2.2 million). However, their overall patterns were similar.

Looking more closely: Commuting in different parts of rural and urban areas

To probe more deeply into commuting flows by type of area, metropolitan-influence zones (MIZ) were used to differentiate between various RST areas. In addition, cities were divided into larger CMAs, smaller CMAs, and CAs. Overall, the proportion of people

Chart A   Except for strong metropolitan-influence zones, over 60% of workers were employed within their census subdivision of residence

Area of residence

Live and work in same census subdivision

Out-commute to a different census subdivision
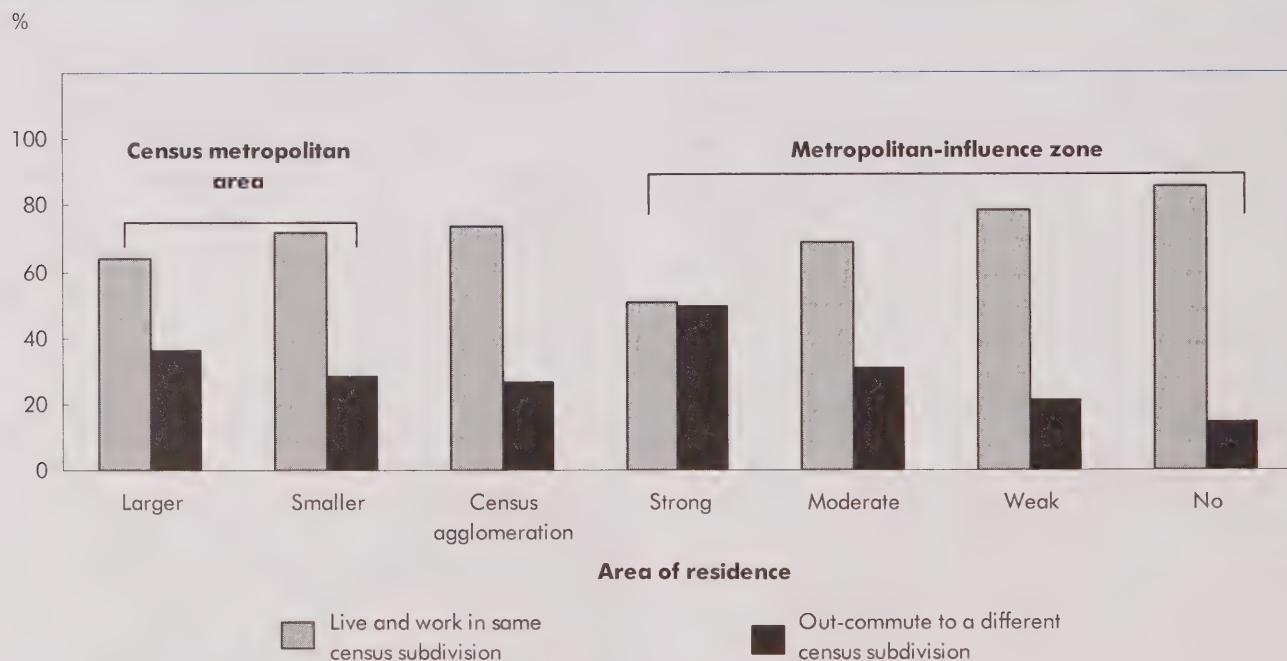
Source: Statistics Canada, Census of Population, 2001.

commuting was similar for LUCs and RST areas. For each type of region, with the exception of strong MIZs, less than 40% of workers were employed in a CSD other than the one in which they lived (Chart A). Approximately 50% of workers residing in a strong MIZ commuted across a CSD boundary.

Rural workers commuting into urban areas were more likely to reside in municipalities in strong MIZs. Of the 4,605 municipalities in RST areas, 663 were in a strong MIZ. However, these municipalities accounted for almost 750,000 workers, or 27% of the total RST workforce.

Municipalities within larger CMAs had a higher proportion of commuters than municipalities within smaller CMAs, which in turn had a higher share than CAs. Larger CMAs typically contain many municipalities, relatively few of which have major employment sites. The remaining municipalities are mainly residential areas. RST areas also display a discernable pattern. Going from municipalities in a strong MIZ to those in

a no MIZ, relatively fewer workers commute as the strength of the MIZ declines. Again, this points to the 'feeder' role of a strong MIZ, which, in an aggregate regional perspective, appears to reflect the idea of a 'bedroom community' more than any other type of region.

Out-commuting: Where are rural and urban commuters going?

In both larger and smaller CMAs, the proportion of out-commuters travelling to RST areas was insignificant (Chart B). In addition, the absolute number of commuters was relatively small. However, a much higher proportion (21%) of out-commuters in CAs travelled to a municipality in an RST area. Not surprisingly, municipalities in a strong MIZ were the most common destination for the out-commuters from an LUC area (Chart C). However, moderate MIZs were only a few percentage points behind (and even tied for commuting from larger CMAs).

Chart B   In large urban centres, up to 20% of out-commuters travelled to a rural or small town area compared with about 60% in moderate metropolitan-influence zones

%

Area of residence

Commuting to larger urban centre

Commuting to rural and small town
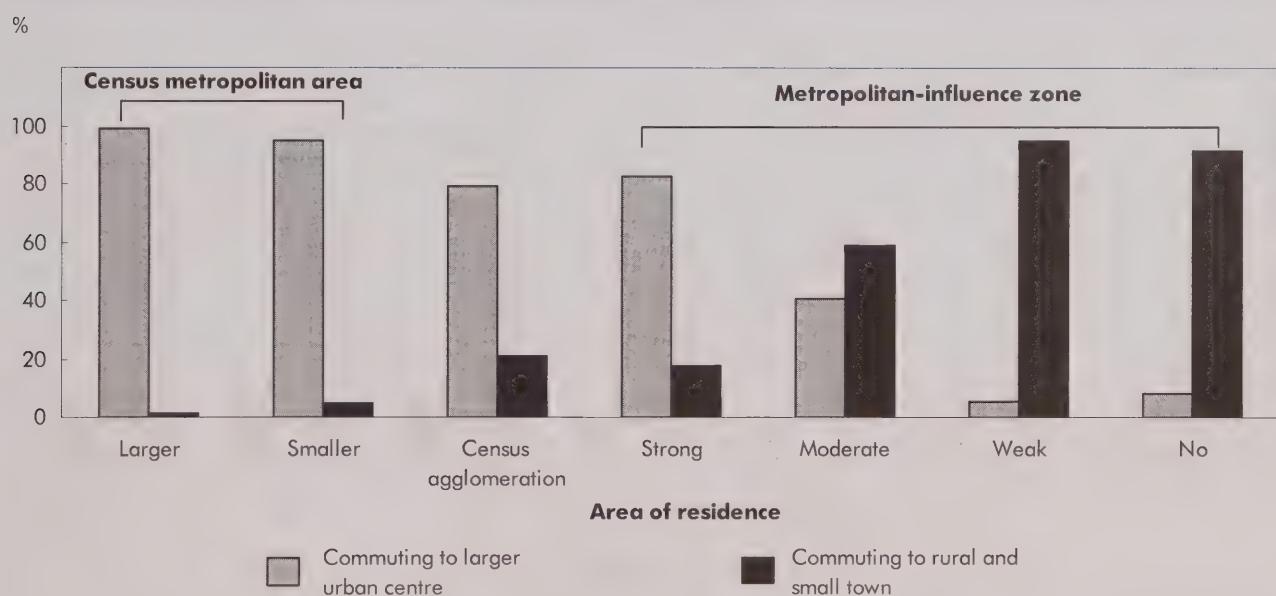
Source: Statistics Canada, Census of Population, 2001.

Among rural and small town areas, strong MIZ municipalities had the most prevalent out-bound commuting relationship with urban areas. More than 80% of out-commuters from a strong MIZ travelled to an LUC municipality. This finding is essentially due to the validity of the MIZ classification, which is based on urban-bound commuting.

The picture is considerably different beyond strong MIZs. In municipalities in moderate MIZ areas, about 40% of out-commuters travelled to an LUC municipality for work, while 60% travelled to another RST municipality. Less than 10% of weak and no MIZ out-commuters travelled to an LUC municipality for work; the rest, to another RST municipality.

Chart C   For each type of larger urban centre, the share of out-commuters to strong and moderate metropolitan-influence zones (MIZ) was similar

%

Destination

□ Strong MIZ   □ Moderate MIZ
■ Weak MIZ   ■ No MIZ

Census metropolitan area

Larger   Smaller   Census agglomeration

Origin of commuting flow
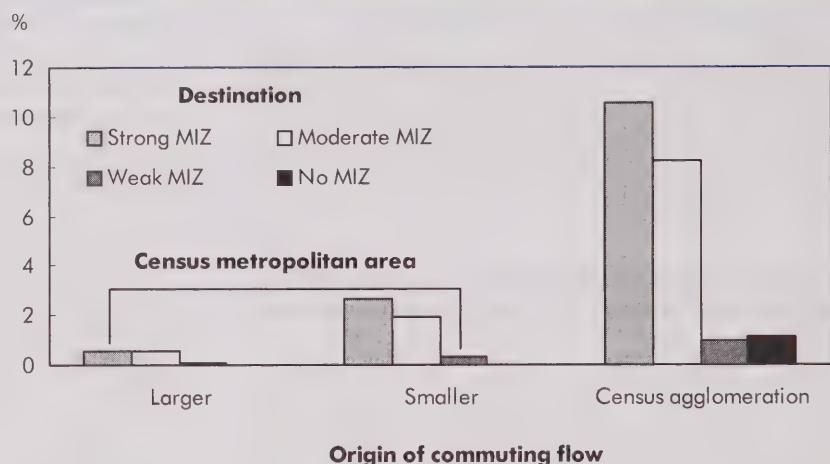
Source: Statistics Canada, Census of Population, 2001.

Chart D   In rural and small town areas, three-quarters of the jobs in any census subdivision were filled by residents of the same subdivision

%

Metropolitan-influence zone

Census metropolitan area

Larger   Smaller   Census   Strong   Moderate   Weak   No
                         agglomeration

Job location

Commute from: ▨ Same area   □ Larger urban centre   ■ Rural and small town
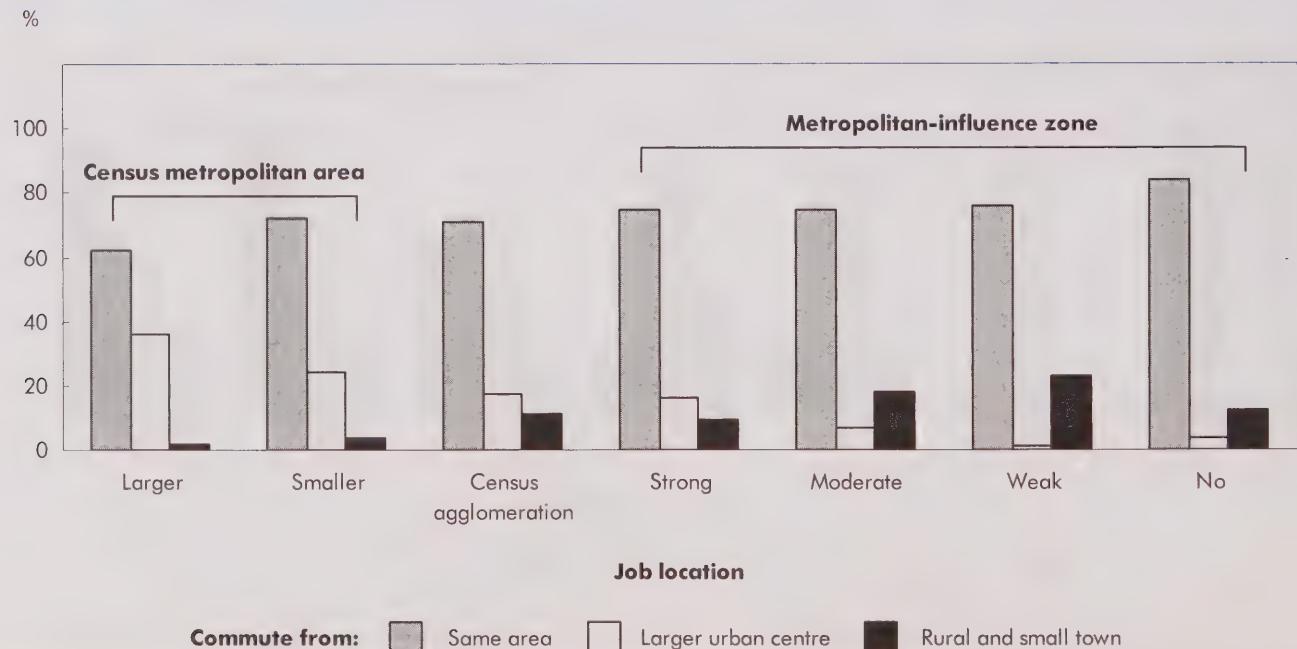
Source: Statistics Canada, Census of Population, 2001.

In-commuting: Who fills rural and urban jobs?

The share of local jobs filled by in-commuting is particularly high for larger CMAs (38%) and smaller CMAs and CAs (almost 30%), while it is close to 25% for strong MIZs, moderate MIZs and weak MIZs (Chart D). It is particularly low for no MIZs (about 16%). However, whether the in-commuters stem mainly from rural or urban areas depends on the type of area. Although some differences existed among LUCs, the share of rural in-commuting was generally low. Municipalities in CAs had a larger portion of jobs filled by in-commuters from RST areas, at about 11%. In contrast, only 4% of jobs in smaller CMAs and less than 2% in larger CMAs were filled by in-commuters from RST areas.

Within RST areas, the share of jobs taken by in-commuters was generally lower than in LUC municipalities. Furthermore, strong MIZs were the only rural and small town areas that had a majority of commuters coming from municipalities in LUCs. About 16% of the jobs in strong MIZ municipalities were filled by commuters from an LUC municipality compared with 9% by commuters from an RST CSD.

For other types of RST areas, the majority of in-commuting emanated from other municipalities within the same area. Once again, this reflects the strong rural-to-rural linkages that tend to be obscured by an analysis of commuting focusing primarily on urban-to-rural flows. Roughly 20% of the jobs in moderate and weak MIZ municipalities were filled by workers from another municipality in an RST area.

Chart E Over 10% of jobs in moderate metropolitan-influence zones were filled by in-commuters from other moderate metropolitan-influence zones
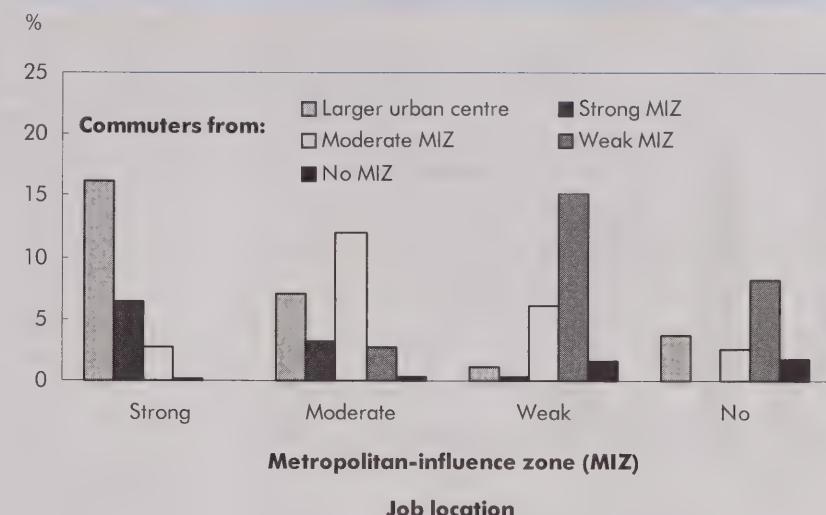
Source: Statistics Canada, Census of Population, 2001.

In strong MIZs, more jobs were taken by commuters from LUC municipalities than by commuters from any other type of area. In contrast, in moderate and weak MIZs more jobs were taken by commuters from a municipality of the same MIZ category than from any other type of area. The linkage between strong MIZ municipalities and other MIZ categories (even with other strong MIZ CSDs) was small compared with the linkage to LUC municipalities.

In strong MIZ municipalities, only about 3% of the jobs were filled by commuters from a moderate MIZ; similarly, within moderate MIZ municipalities, only about 3% of the jobs were filled from a strong MIZ (Chart E). Thus, moderate, weak and no MIZ munici-

palities not only had a low degree of integration with LUC municipalities, they were also relatively less integrated with strong MIZ municipalities.

Census agglomerations are the main departure point of LUC commuters travelling to RST areas (Chart F). With the exception of weak MIZs, a considerably larger proportion of workers in each type of rural and small town area travelled from a CA than from either a smaller or larger CMA. In general, it was the strong MIZ municipalities that were most affected by commuters from an LUC municipality.

More than 16% of the people working in strong MIZ municipalities travelled from an LUC munici-

**Chart F   In most types of rural census
subdivisions, over half of the
commuters from a larger urban
centre were from a census
agglomeration**

%

Commuters from:

☐ Larger census metropolitan area
☐ Smaller census metropolitan area
■ Census agglomeration

Metropolitan-influence zone

Job location
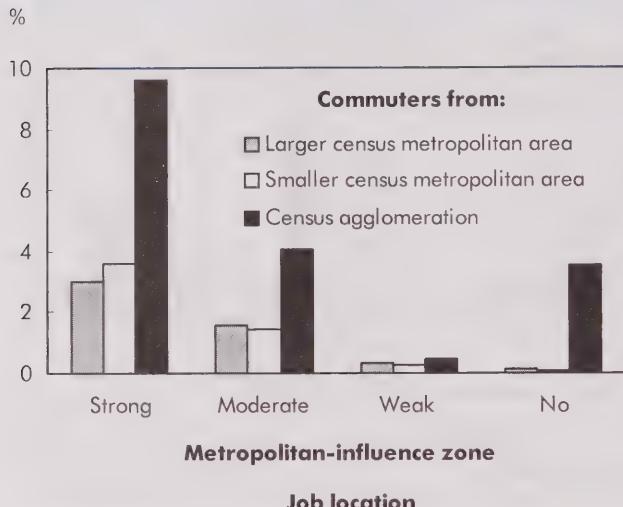
Source: Statistics Canada, Census of Population, 2001.

pality—with well over half of them in-commuting from a CA. The equivalent proportion for moderate MIZs, the next closest regional type, was approximately 7%. (However, since MIZ classification is based on the size of commuting to any CMA or CA, such reverse commuting from a CMA or CA to strong MIZ municipalities may be expected.)

Conclusion

Commuting is, to a large extent, an urban phenomenon. Given the existing distribution of population and jobs, it is not surprising that close to 80% of commuting takes place between municipalities within larger urban centres. The existing research on commuting within CMAs indicates that, even in these areas, commuting patterns are becoming increasingly complex with growing core-to-periphery and periphery-to-periphery flows.

Rural commuting is also more complex than commonly believed. Any analysis of commuting that concentrates on the flows from the (rural) periphery to

the (urban) core overlooks half of rural commuting, which is rural-to-rural. For commuters residing in rural and small town areas, rural-to-rural commuting is as large as rural-to-urban commuting. Moreover, rural jobs are more than twice as reliant on in-commuters from other rural areas as they are on in-commuters from urban areas. Rural-to-rural linkages appear particularly strong in RST areas beyond strong MIZs. Overlooking these rural-to-rural commuting flows limits understanding of the economic linkages between rural communities and the degree of integration in rural labour markets.

CMAs and CAs seem to successfully delineate self-contained labour markets. Only 4% of jobs in larger urban centres are filled by commuters from RST areas (these workers represent 16% of workers residing in RST areas). As well, RST areas classified as strong MIZs accurately constitute the dividing belt between LUCs and RST areas. The pattern of rural-to-rural commuting has been labelled the 'arena society' to emphasize that different functions—residence, recreation and work—are increasingly disjointed over space and may each involve a commute in a different direction (Persson et al. 1997).

At the regional level, the analysis of commuting flows is a pre-condition for the identification of functional areas that present strong economic linkages and share a common pool of labour. These areas form an important territorial unit of analysis as well as a focus for the delivery of policy. The research challenge is to provide a better delineation of rural labour markets that can complement the information captured by the prevailing MIZ classification. Clearly some rural areas are strongly connected to urban labour markets, but most of the rural communities and half of the rural commuters are dependent on other rural labour markets.

Perspectives

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What's new?

Recent reports and studies

■ From Statistics Canada

■ *Workplace and Employee Survey: Compensation practices*

The number of workers having access to non-wage benefits such as health-related and retirement benefits, as well as paid vacations, increased between 1999 and 2005. However, fewer workplaces offered perform-ance pay.

Almost three-quarters (74.0%) of workers had access to at least one non-wage benefit, up from 67.8% in 1999—reflecting the growth in the proportion of workplaces providing non-wage benefits, from 41.8% in 1999 to 48.0% in 2005.

Women, youths and workers with less than high school education were less likely to have access to non-wage benefits.

Workers in a unionized job, or one covered by collec-tive bargaining, were more likely to receive non-wage benefits, as were full-time workers. Generally, as earn-ings increased so did the likelihood of receiving non-wage benefits.

Those least likely to have access to non-wage benefits were workers in retail trade and consumer services (54.6%); those most likely were in finance and insur-ance (over 90%).

In 2005, 36.9% of workplaces offered some type of performance-related pay to their employees, down from 40.1% in 1999.

For more information, see the September 24, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *National Apprenticeship Survey*

In 2007, 88% of apprentices who completed their program were employed, compared with 82% of those who did not finish. Those who completed were also more likely to have full-time jobs and receive sub-stantially higher wages.

This difference was more pronounced in Ontario, where 91% of those who completed their programs were employed, compared with 82% of those who discontinued. In contrast, the difference was least pro-nounced in Quebec, where 72% of completers and 70% of discontinuers were employed.

Among those who were employed, apprentices who finished their training were more likely to have perma-nent jobs (80% compared with 76% of discontinuers). This was true in all provinces and territories except Alberta, where an equal proportion (77%) of employed completers and discontinuers held perma-nent jobs.

Multiple factors explain why discontinuers left their apprenticeship program. The most common reason (16%) was not enough work in the trade to warrant continuing or insufficient income as an apprentice to meet their requirements.

Among the discontinuers, women were more likely to cite family issues as their main reason, while men were more likely to cite not enough work or insufficient incomes. Aboriginal apprentices were more likely to cite family issues and not enough available work.

For more information, see the September 16, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Labour productivity*

Canadian business labour productivity declined 0.2% in the second quarter of 2008, after decreases of 0.6% in each of the previous two quarters. This is the longest series of consecutive quarterly declines since 1990.

In the second quarter, declining exports contributed to the second consecutive quarterly drop in real gross domestic product (GDP) of businesses. Hours worked in the business sector edged up 0.1% for the second consecutive quarter, a slowdown from 2007, when hours worked grew by 0.5% per quarter on average.

Labour productivity in goods producing industries fell for a fifth consecutive quarter. Mining, oil and gas extraction industries, as well as construction, were the major contributors. In contrast, labour productivity in manufacturing grew 0.8%, its first gain since the third quarter of 2007.

In the United States, business labour productivity grew 1.1% in the second quarter, after increasing 0.6% in the previous quarter.

In annual terms, productivity in American businesses was 4.4% higher in 2007 than in 2004, similar to productivity growth in Canadian businesses (4.3%) over the same period.

For more information, see the September 10, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

■ *Employment Insurance Coverage*

The number of Canadians receiving regular Employment Insurance (EI) benefits in 2007 hit its lowest level since 2000, mainly as a result of a drop in unemployment, rather than a change in the makeup of the unemployed.

In 2007, about 452,000 Canadians received regular EI benefits during the reference week of the Employment Insurance Coverage survey, down 5.0% from 2006 and the fifth annual decline in a row. The level was 16.5% below the post-millennium peak of 540,800 in 2003.

Of the 452,000 recipients, 67.3% were unemployed. This was a 23.8% decline from 2003. The regular benefits program is designed primarily for the unem-

ployed. Other recipients included those employed less than 30 hours; not in the labour force or working full time with an interruption in the three months prior to the reference period; and working mothers with infants.

During the reference week, about two-thirds (67.7%) of EI claimants received regular benefits, and just over one-quarter (25.7%) received maternity or parental benefits.

On average, just over one million people were unemployed nationally in 2007, down 16.0% from 2003. Roughly 70% of these unemployed contributed to the EI program in 2007. In all, 54.0% were potentially eligible to receive benefits, regular or other, compared with 57.1% five years earlier.

Not everyone leaving their job for a reason that meets eligibility criteria is entitled to benefits. An unemployed person is also required to have accumulated a certain number of hours of paid employment. In 2007, 9.6% of unemployed individuals who were otherwise potentially eligible had not accumulated enough hours of work.

The number of mothers with a child up to 12 months of age rose 3.3% to nearly 377,000, after declining slightly in 2006. More than three-quarters of these mothers (77.2%) had insurable income. In all, 85.9% of them received benefits in the form of maternity or parental benefits during their pregnancy or since the birth or adoption of their child.

The introduction of the Quebec Parental Insurance Plan (QPIP) in 2006 had a major impact on the number of fathers who claimed or intended to claim parental benefits. Nationally, the proportion increased to 26.8% in 2007, from 20% in 2006 and 15% in 2005. This increase mainly reflects the trend in Quebec where 73.6% of fathers took advantage of the plan in 2007, compared with the 48.4% in 2006 and 27.8% in 2005 who used the federal plan. This was likely due to one of the provisions in the Quebec plan that includes leave exclusively for fathers.

For more information, see the July 24, 2008 issue of *The Daily* on the Statistics Canada's website (www.statcan.gc.ca).

From other organizations

House prices and consumer spending

This article examines estimates of the effect of housing wealth on consumer spending in several advanced countries, and how institutional differences in national mortgage markets lead to different effects.

The liberalization of mortgage markets since the early 1980s has resulted in a stronger link between house prices and consumer spending—stronger in countries like Australia, Canada, the United States and the United Kingdom than in countries like Spain and France, which have less-developed mortgage markets. More-developed mortgage markets are characterized by lower down payment ratios, increased availability of home-equity borrowing products, longer average mortgage terms, and a higher degree of mortgage securitization.

A major global correction in house prices can pose serious challenges for policy-makers. The negative consequences of a general decline in house prices would be expected to be greatest for countries where houses are seriously overvalued and where consumption expenditures and house prices are closely linked (e.g. the United States, the United Kingdom, the Netherlands, and Australia). See "House prices and consumer spending" by Kimberly Flood, Sylvie Morin and Ilan Kolet, *Bank of Canada Review*, Summer 2008.

CEO pay for luck

According to the rent-extraction hypothesis, weak corporate governance allows entrenched CEOs to capture the pay-setting process and benefit from events outside of their control, i.e. get paid for luck. This paper finds that the independence requirement imposed on boards of directors by the Sarbanes-Oxley Act of 2002 (SOX), together with the governance regulations subsequently introduced by stock exchanges, affects CEO pay structure.

In firms whose corporate boards were originally less independent, and thus more affected by these provisions, CEO pay for performance strengthened while pay for luck decreased after SOX. In contrast, those firms that exhibited strong board independence prior to SOX showed little evidence of pay for luck and

little change in pay for performance. See *The Effect of the Sarbanes-Oxley Act on CEO Pay for Luck* by Teodora Paligorova, Bank of Canada, Working Paper 2008-20, June 2008.

Costly capital reallocation and aggregate productivity

This paper examines the effects of capital reallocation (the flow of productive capital across firms and establishments mainly through changes in ownership) on aggregate labour productivity. Capital reallocation is important in the United States: on average, its total value is 3 to 4% of U.S. GDP. Firms with lower productivity are more likely to be reallocated to more productive firms. Reallocated establishments experience an increase in productivity. The paper presents a dynamic model of capital reallocation and compares its predictions with U.S. data. In the model, limited participation in acquisition markets by heterogeneous firms results in an increase in aggregate productivity.

With reasonably chosen parameter values, policy simulations show that the increased reallocation of capital and labour contributed as much as a 17% improvement in aggregate labour productivity in the mid-1980s. See *A Model of Costly Capital Reallocation and Aggregate Productivity* by Shutao Cao, Bank of Canada, Working Paper 2008-38, October 2008.

Human capital risk and firm-size wage premium

Why do employees earn more in large firms than in small firms, even after controlling for observable characteristics? This paper proposes a model that answers this question. In the model, individuals accumulate human capital and are exposed to the risk of losing some as they change jobs, voluntarily or involuntarily. The model, calibrated to the United States and Canada, accounts for one-third of the firm-size wage premium. The model finds that the earnings gap between Canada and the United States is due solely to differences in labour market uncertainty. See *Human Capital Risk and the Firm-Size Wage Premium* by Danny Leung and Alexander Ueberfeldt, Bank of Canada, Working Paper 2008-33, September 2008.

Work expectations and depression in older workers

Based on over 4,200 observations drawn from the Health and Retirement Study (HRS), this paper examines workers who were less than 62 at the 1992 HRS baseline, and who had reached age 62 by the end of the study, enabling comparison of actual labour force withdrawal with earlier expectations. Poisson regressions were used to estimate the impact of expected full-time work status on depressive symptoms; regressions were estimated separately for those working full time at age 62 and those not working full time.

The results show significant effects on depression at age 62 both for full-time workers who expected not to be working full time, and for participants not working full time who expected to be doing so. These results hold even after adjustment for earlier depressive symptoms, socio-demographic and other relevant controls. The findings suggest that working longer and retiring earlier than expected may each compromise psychological well-being. The current financial crisis may result in both scenarios as some workers may have to work longer than expected due to the decline in pension and other wealth, while others may retire earlier due to job loss. See *Work Expectations, Realizations, and Depression in Older Workers* by Tracy A. Falba, William T. Gallo and Jody L. Sindelar, NBER, Working Paper no. 14435, October 2008.

Psychiatric disorders and employment

This paper estimates the effects of psychiatric disorder on employment. Employment and disorder outcomes are modelled jointly with a bivariate probit model using local availability of treatment resources and early onset of disorder as identifying variables. Among men, psychiatric disorder in the past 12 months

is associated with a reduction of 9 to 11 percentage points in the likelihood of current labour force participation and a reduction of about 10 percentage points in the likelihood of employment. Among women, the paper also finds negative, but less consistent, associations between recent disorder and labour force participation and employment. See *Psychiatric Disorders and Employment: New Evidence from the Collaborative Psychiatric Epidemiology Surveys* by Pinka Chatterji, Margarita Alegria and David Takeuchi, NBER, Working Paper no. 14404, October 2008.

What makes them tick?

Using data on over 11,000 industrial scientists and engineers, this study finds that individuals' motives have significant effects on innovative effort and performance in firms. These effects vary significantly, however, by the particular kind of motive (e.g. desire for intellectual challenge vs. pay). Intrinsic and extrinsic motives affect innovative performance even when controlling for effort, suggesting that motives affect not only the level of individual effort, but also its quality. Overall, intrinsic motives, particularly the desire for intellectual challenge, appear to benefit innovation more than extrinsic motives such as pay.

Explanations of the 'paradox' of open source software development, namely that programmers develop software code despite the apparent absence of financial gain, have also highlighted the role of individual, and especially non pecuniary, incentives associated with software innovation. See *What Makes Them Tick? Employee Motives and Firm Innovation* by Henry Sauermann and Wesley M. Cohen, NBER, Working Paper no. 14443, October 2008.

Perspectives

In the works

Some of the topics in upcoming issues

■ Wages of older workers

With the aging of the baby-boomers, age-earnings profiles will be of even more importance in forecasting future pension benefits payout.

■ Immigrants: Still settling for less?

Despite their higher education level, immigrants continue to be over-represented in low-skilled jobs and to have lower earnings than Canadian-born workers.

■ Time-crunched families

A profile of time-crunched families in the context of the increased labour market participation of women with children and the rising proportion of dual-earner families.

■ Employer top-ups

A look at the trends in the proportion of mothers with a paid job who receive a top-up from their employer after birth, as well as their socio-demographic and job characteristics.

Perspectives

Varia

In this issue: Gambling

CONTACTS

Administrative data
Small area and administrative data
Customer Services
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Business surveys
*Annual Survey of Manufactures
and Logging*
Client Services
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Annual surveys of service industries
Client Services
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*Business Conditions Survey of
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Census
Labour force characteristics
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Income statistics
Eric Olson
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Employment and income surveys
Labour Force Survey
Marc Lévesque
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*Survey of Employment, Payrolls
and Hours*
Sylvie Picard
613-951-4003

*Employment Insurance
Statistics Program*
Gilles Groleau
613-951-4091

Major wage settlements
Workplace Information Directorate
(Human Resources and Social
Development Canada)
819-997-3117 or 1-800-567-6866

Labour income
Anna MacDonald
613-951-3784

*Survey of Labour and Income Dynamics
Survey of Financial Security
Survey of Household Spending*
Client Services
613-951-7355 or 1-888-297-7355

General Social Survey
*Education, Work and Retirement
Aging and Social Support
Time Use*
Client Services
613-951-5979

Pension surveys
Pension Plans in Canada Survey
Bruno Pépin
613-951-4023

*Quarterly Survey of Trusteed
Pension Funds*
Gregory Sannes
613-951-4034

Special surveys
Adult Education and Training Survey
Client Services
613-951-7608 or 1-800-307-3382

National Graduates Survey
Client Services
613-951-7608

Gambling

- Net revenue from government-run lotteries, video lottery terminals (VLTs), casinos, and slot machines not in casinos rose from $2.7 billion in 1992 to 13.6 billion in 2007.[1]

- Net revenue from pari-mutuel betting (horse racing) dropped from $532 million to $384 million over the same period (1992 to 2007).

- In 2007, lotteries accounted for 25% of all net non-charity gambling revenue, casinos 33%, VLTs and slot machines not in casinos 21%.

- Average gambling revenue per person 18 and over in 2007 ranged from $121 in the three territories to $890 in Alberta, with a national average of $524.[2]

- Compared with workers in non-gambling industries, those in gambling were more likely to be women (53% versus 47%), paid by the hour (80% versus 65%), and paid less ($18 hourly versus $20) and receiving tips at their job (30% versus 7%).

- Employment in the gambling industry rose from 11,000 in 1992 to 46,000 in 2007.

- One in seven women and men living alone reported spending money on casinos, slot machines or VLTs; however, the men spent almost four times as much as the women—$1,667 compared with $446.[3]

- Gambling participation and expenditure rates increased with household income. For example, 54% of households with incomes of less than $20,000 gambled in 2006 and spent an average of $469, while equivalent figures for those with incomes of $80,000 or more were 82% and $566.

Net revenue from government-run gambling has increased steadily

$ billions

$ billions
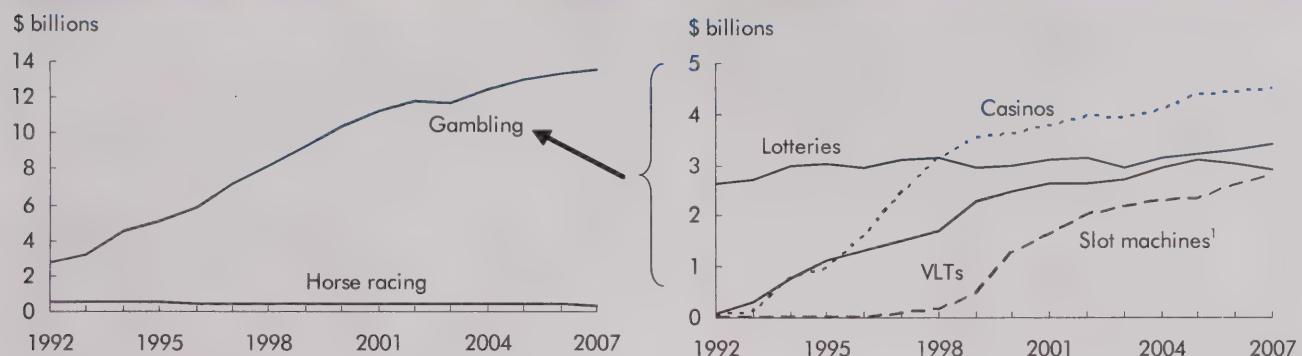
1. Refers to ones found outside government-run casinos.
Source: Statistics Canada, National Accounts.

Gambling revenues and profits

	Gambling revenue[1]		Gambling profit[2]		Share of total revenue[3]		Revenue per capita (18 and over)[4]	
	1992	2007	1992	2007	1992	2005	1992	2007
	$ millions (current)				%		$	
Canada	**2,734**	**13,649**	**1,680**	**7,058**	**1.9**	**4.8**	**128**	**524**
Newfoundland and Labrador	80	189	42	106	2.3	3.2	189	461
Prince Edward Island	20	42	7	13	2.7	3.0	209	388
Nova Scotia	125	320	72	148	2.8	4.3	180	425
New Brunswick	117	214	49	123	2.7	3.2	209	353
Quebec	693	2,775	472	1,425	1.8	4.5	128	450
Ontario	853	4,699	529	1,658	1.9	5.3	106	468
Manitoba	153	566	105	354	2.5	5.2	186	624
Saskatchewan	62	530	39	316	1.1	5.1	86	696
Alberta	225	2,386	125	1,828	1.6	5.2	118	890
British Columbia	403	1,919	239	1,081	2.2	4.5	153	545
Yukon, Northwest Territories and Nunavut	5	9	1	6	0.3	0.3	82	121

1. Total revenue from wagers on government-controlled lotteries, casinos and VLTs, minus prizes and winnings.
2. Net income of provincial governments from total gambling revenue, less operating and other expenses (see Data sources and definitions).
3. The 2005 share of total revenue calculation is based on 2005 gambling revenue and 2005 total provincial revenue. The 2006 provincial revenue
    will be available autumn 2008.
4. Persons 18 and over were selected as this is the legal age of gambling in most provinces.
Sources: Statistics Canada, National Accounts, Public Institutions (Financial management statistics) and post-censal population estimates.

Characteristics of workers

	Gambling		Non-gambling	
	1992	2007	1992	2007
	thousand			
Total employed	**11**	**46**	**12,720**	**16,820**
Sex		%		
Men	35	47	55	53
Women	65	53	45	47
Age				
15 to 34	57	42	45	37
35 and over	43	58	55	63
Education				
High school or less	66	48	57	41
Postsecondary certificate				
or diploma	21	38	27	35
University degree	13	14	16	24
Work status				
Full-time	60	84	81	82
Part-time	40	16	19	18
Provinces				
Atlantic provinces	8	3	7	7
Quebec	F	14	24	23
Ontario	28	46	39	39
Prairie provinces	30	18	17	18
British Columbia	25	19	13	13
Class of worker				
Employee	99	99	85	84
Self-employed	F	F	15	16

Source: Statistics Canada, Labour Force Survey.

Gambling outpaced other industries

1992=100
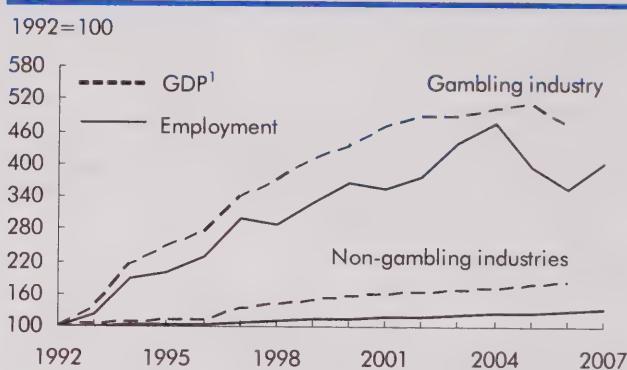
1. The price, at basic prices, of the goods and services produced. The GDP figures for the gambling industry refer strictly to wagering activities, such as lottery ticket sales, VLT receipt sales, and bets at casinos. Other economic spinoffs, such as hotel and restaurant business, security services, or building and equipment maintenance are not included.
Sources: Statistics Canada, Labour Force Survey; National Accounts.

Characteristics of jobs

	Gambling		Non-gambling	
	1997	2007	1997	2007
	thousand			
Employees[1]	**33**	**45**	**11,323**	**14,206**
		%		
Unionized[2]	29	26	34	32
Non-unionized	71	74	66	68
Permanent job	91	92	89	87
Temporary job	9	8	11	13
Usually receive tips	27	30	7	7
No tips	73	70	93	93
Paid by the hour	80	80	61	65
Not paid hourly	20	20	39	35
Average hourly earnings[3]		$		
Men: full-time	13.51	20.57	17.83	23.25
Women: full-time	13.04	17.42	14.79	19.90

1. More detailed questions on employees were introduced with the 1997 revision of the Labour Force Survey.
2. Includes persons who are not union members, but whose jobs are covered by collective agreements.
3. Includes tips and commissions.
Source: Statistics Canada, Labour Force Survey.

Household expenditures on gambling activities

	At least one gambling activity		Government lotteries		Other lotteries/raffles, etc.		Casinos, slot machines and VLTs		Bingos	
	$	%	$	%	$	%	$	%	$	%
All households										
2000	492	74	245	64	84	31	546	21	743	9
2001	513	72	257	62	98	30	554	20	815	9
2002	570	73	263	63	129	30	679	21	905	8
2003	506	74	243	66	96	29	670	19	799	8
2004	514	71	265	61	101	28	664	19	805	6
2005	549	69	254	61	142	27	720	18	963	6
2006	493	73	254	64	109	28	686	19	521	6
One-person households[1]	523	62	212	53	103	18	1,034	16	566	5
Men	731	62	274	55	141	18	1,667	16	267	2
18 to 44	606	56	204	48	118	17	1,101	20	F	F
45 to 64	1,038	66	300	61	98	21	4,069	12	F	F
65 and over	521	70	367	62	285	17	516	15	F	F
Women	341	62	153	51	70	19	446	15	641	8
18 to 44	210	64	88	52	58	22	310	21	F	F
45 to 64	306	68	164	58	81	23	521	11	529	7
65 and over	455	56	182	46	66	14	510	15	778	11
All households										
Newfoundland and Labrador	472	76	278	67	79	41	541	10	556	16
Prince Edward Island	441	76	234	59	104	51	262	17	982	10
Nova Scotia	424	80	228	69	72	47	499	17	705	9
New Brunswick	422	73	277	64	76	39	458	8	673	9
Quebec	402	75	258	68	95	17	494	16	359	7
Ontario	507	71	258	63	109	27	647	22	598	5
Manitoba	548	69	220	57	95	36	778	21	599	10
Saskatchewan	491	77	212	63	108	49	537	28	546	8
Alberta	566	72	272	62	156	39	757	20	497	6
British Columbia	605	70	238	62	112	28	1,184	18	566	5
Income after tax										
Less than $20,000	469	54	190	46	75	11	1,057	11	580	8
$20,000 to $39,999	513	69	247	62	102	22	859	16	590	8
$40,000 to $59,999	446	77	269	69	100	31	492	21	428	6
$60,000 to $79,999	445	80	247	71	93	36	551	24	370	5
$80,000 and over	566	82	285	72	140	41	672	26	549	4

1. Using one-person households allows examination of individual characteristics. Persons 18 and over were selected as this is the legal age for gambling in most provinces.
Note: Expenditures are per spending household. Unless otherwise indicated, figures are for 2006.
Source: Statistics Canada, Survey of Household Spending.

Household expenditure on all gambling activities by income groups, 2006

	Average expenditure			Gaming as % of total income	
	All house-holds	Reporting house-holds	Per-centage reporting	All house-holds	Reporting house-holds
	$	$	%	%	%
Income after tax	**358**	**493**	**73**	**0.5**	**0.7**
Less than $20,000	255	469	54	2.0	3.5
$20,000 to $39,999	355	513	69	1.2	1.7
$40,000 to $59,999	344	446	77	0.7	0.9
$60,000 to $79,999	357	445	80	0.5	0.6
$80,000 and over	461	566	82	0.4	0.5

Source: Statistics Canada, Survey of Household Spending.

■ **Notes**

1. Refers to total money wagered on non-charity lotteries, casinos and VLTs, minus prizes and winnings.

2. Survey of Household Spending (SHS) and National Accounts rankings of provincial expenditures differ, in part because the SHS includes both charity and non-charity gambling activity.

3. The expenditure figures are not adjusted for any winnings. As well, households consistently under-report the amount of money they spend on gambling. Comparisons with Lottery Corporation figures, for example, have shown that households under-report their government lottery purchases by more than 50%.

For further information on any of these data, contact Katherine Marshall, Labour and Household Surveys Analysis Division. She can be reached at 613-951-6890 or katherine.marshall@statcan.gc.ca.

Cumulative index

1989 to 2008

This index lists articles published in Perspectives on Labour and Income *(Catalogue no. 75-001-XPE) since its inception (Summer 1989) up to and including the latest issue. For further information, call Henry Pold 613-951-4608. The online publication date is shown in parentheses.*

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